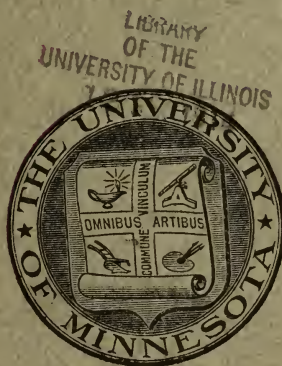


The University of Minnesota

THE COLLEGE OF EDUCATION

1914-1915



BULLETIN OF THE UNIVERSITY OF MINNESOTA

VOL. XVII, No. 13. AUGUST 1914

Entered at the Post-Office
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Minneapolis, Minn.

The Bulletin of the University of Minnesota is issued as often as twice a month during the University year.

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The University of Minnesota

THE COLLEGE OF EDUCATION

1914-1915

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1914							1915													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
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12	13	14	15	16	17	18	10	11	12	13	14	15	16	11	12	13	14	15	16	17
19	20	21	22	23	24	25	17	18	19	20	21	22	23	18	19	20	21	22	23	24
26	27	28	29	30	31	..	24	25	26	27	28	29	30	25	26	27	28	29	30	31
..	31
AUGUST							FEBRUARY							AUGUST						
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23	24	25	26	27	28	29	28	29	30	31
30	31
SEPTEMBER							MARCH							SEPTEMBER						
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27	28	29	30	28	29	30	31	26	27	28	29	30
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4	5	6	7	8	9	10	4	5	6	7	8	9	10	3	4	5	6	7	8	9
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25	26	27	28	29	30	31	25	26	27	28	29	30	..	24	25	26	27	28	29	30
..	31
NOVEMBER							MAY							NOVEMBER						
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8	9	10	11	12	13	14	2	3	4	5	6	7	8	7	8	9	10	11	12	13
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29	30	23	24	25	26	27	28	29	28	29	30
..	30	31
DECEMBER							JUNE							DECEMBER						
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27	28	29	30	31	27	28	29	30	25	27	28	29	30	31	..

UNIVERSITY CALENDAR

1914-1915

The University year covers a period of thirty-eight weeks, beginning on the second Tuesday in September. Commencement Day is always the second Thursday in June.

1914

September	1	Tuesday	Registration closes except for new students
September	1-8	Week	Fees payable except for new students
September	8-15	Week	Examinations for removal of conditions, entrance examinations, registration of new students, and payment of fees
September	9-15	Week	Military encampment of cadets
September	16	Wednesday	First semester begins
November	25	Wednesday	Thanksgiving recess begins 9:00 p.m.
November	30	Monday	Thanksgiving recess ends 8:00 a.m.
December	18	Friday	Christmas vacation begins 9:00 p.m.

1915

January	5	Tuesday	Christmas vacation ends 8:00 a.m.
January	19	Tuesday	Registration for second semester closes
January	25	Monday	Final examinations begin
January	26	Tuesday	Payment of fees for second semester closes
February	3	Wednesday	Second semester begins
February	11	Thursday	First semester class reports due
February	12	Friday	Lincoln's Birthday: a holiday
February	22	Monday	Washington's Birthday: a holiday
March	31	Wednesday	Easter recess begins 9:00 p.m.
April	8	Thursday	Easter recess ends 8:00 a.m.
April	12-17	Week	First semester condition examinations
May	29	Saturday	Final examinations begin
June	5	Saturday	Second semester closes
June	6	Sunday	Baccalaureate service
June	7	Monday	Senior class day exercises
June	9	Wednesday	Alumni Day
June	10	Thursday	Forty-third Annual Commencement
June	11	Friday	Summer vacation begins
June	14	Monday	Summer Session begins

The University year for 1915-16 will begin Tuesday, September 7.

THE COLLEGE OF EDUCATION

FACULTY

GEORGE EDGAR VINCENT, Ph.D., LL.D., President	1005 5th St. S. E.
CYRUS NORTHROP, LL.D., President, Emeritus	519 10th av S. E.
GEORGE F. JAMES, Ph.D., Dean and Professor of Education	316 10th Ave. S. E.
GEORGE N. BAUER, Ph.D., Professor of Mathematics	1115 E. River Road
FREDERIC E. CLEMENTS, Ph.D., Professor of Botany	800 4th St. S. E.
HARDIN CRAIG, Ph.D., Professor of English	
WILLIAM H. EMMONS, Ph.D., Professor of Geology	719 7th St. S. E.
LOUIS J. COOKE, M.D., Director of Gymnasium	909 6th St. S. E.
*JOHN J. FLATHER, Ph.B., M.M.E., Professor of Mechanical Engineering	315 11th Ave. S. E.
GEORGE B. FRANKFORTER, Ph.D., Professor of Chemistry	525 E. River Road
JOHN HENRY GRAY, Ph.D., Professor of Economics	412 Walnut St. S. E.
JOHN CORRIN HUTCHINSON, B.A., Professor of Greek	3806 Blaisdell Ave.
RAYMOND A. KENT, M.A., Assistant Professor of Education and Principal of the University High School	State Capitol, St. Paul
DAVID L. KIEHLE, LL.D., Professor of Education, Emeritus	226 58th St. E., Portland, Ore.
FRANCIS P. LEAVENWORTH, M.A., Professor of Astronomy	317 17th Ave. S. E.
EVERETT W. OLMSTED, Ph.D., Professor of Romance Languages	
JOSEPH BROWN PIKE, M.A., Professor of Latin	1025 6th St. S. E.
SAMUEL QUIGLEY, M.A., Assistant Professor of Education	522 15th Ave. S. E.
ALBERT W. RANKIN, B.A., Professor of Education	916 5th St. S. E.
WILLIAM A. SCHAPER, Ph.D., Professor of Political Science	625 Fulton St. S. E.
CARL SCHLENKER, B.A., Professor of German	514 11th Ave. S. E.
CARLYLE M. SCOTT, Professor of Music	3322 Lyndale Ave. S.
CHARLES PETER SIGERFOOS, Ph.D., Professor of Animal Biology	1023 University Ave. S. E.
SAMUEL G. SMITH, Ph.D., LL.D., Professor of Sociology	The Aberdeen, St. Paul
ANDREW A. STOMBERG, M.S., Professor of Scandinavian	531 Walnut St. S. E.
ASHLEY V. STORM, M.A., Professor of Agricultural Education	1827 4th St. S. E.
FLETCHER HARPER SWIFT, Ph.D., Professor of Education	215 Walnut St. S. E.

*Absent on leave 1914-15.

*JOSEPH M. THOMAS, Ph.D., Professor of Rhetoric

*NORMAN WILDE, Ph.D., Professor of Philosophy and Psychology

901 6th St. S. E.

*JOHN ZELENY, Ph.D., Professor of Physics

712 10th Ave. S. E.

INSTRUCTORS

CHARLES M. HOLT, B.A., Education

1400 Willow St.

LAURA FRANCES KENDALL, Music

3529 Colfax Ave. S.

AUGUST CHARLES KREY, M.A., History

1201 7th St. S. E.

B. F. PITTINGER, M.A., Education

316 12th Ave. S. E.

UNIVERSITY HIGH SCHOOL

†—————, English

JESSIE W. BOYCE, B.A., Mathematics

1112 4th St. S. E.

CARL FOSSE, B.A., Science

716 16th Ave. S. E.

MARY GOULD, B.A., German and Latin

EMIL JOSI, B.A., Manual Training

RAY L. LELAND, B.A., History

LOUISE MCDANELL, M.A., Home Economics 1286 Raymond Ave., St. Paul

†—————, Agriculture

*Absent on leave 1914-15.

†Appointment to be made.

GENERAL INFORMATION

The College of Education was authorized by a special enactment of the Legislature of Minnesota in 1905, and was established by the Regents of the University in the following year.

It offers both a practical and a theoretical training for prospective high-school teachers and principals, for principals of elementary schools, for supervisors of special studies, and for superintendents of school systems.

ADMISSION AND FEES

For information concerning requirements for admission and incidental and deposit fees, see Bulletin of General Information.

Students who plan to enter the College of Education are advised to consult with the Dean of that College in regard to their course of study during their first year of college study. When they have completed with credit at least two full years of college work, they will be admitted to this College. During these two years they should have pursued one or more of the subjects which they expect to teach and, in addition, one year in general psychology.

COURSES OF STUDY

The College of Education offers a two-year course of study leading to the degree of Bachelor of Arts (in Education). The preparation for teaching which is afforded in these two years, in addition to two years of previous collegiate study, is planned to include first of all a thorough grounding in the correct use of English, both spoken and written. No student should propose to go into his work without adequate training of this kind, no matter what subjects he himself expects to teach, and no one will be graduated from the College of Education who has not attained a satisfactory standard in this particular.

A second element in the preparation of the future teacher is found in the courses in general and educational psychology, in the history and the organization of schools, in educational theory, and in the practice of teaching. Courses in psychology and in the history of education should be pursued by all students, and additional courses are elective in the theory and practice of elementary and secondary teaching, in the history of secondary education, in school organization and law, and in school hygiene.

Another part of the teacher's training is found in the specific subjects which he proposes to teach. In this particular the standard in Minnesota schools is constantly rising, and year by year school trustees are asking of all high-school teachers more definite and adequate preparation in the subjects assigned them. This preparation is not possible unless the prospective teacher selects his subjects early in the college course and effects also a desirable and natural combination. When this is done, the

work required for a Bachelor's degree may be arranged to give both a liberal and a special training.

A third year of study leads to the degree of Master of Arts. The work of this year includes advanced studies in education and in philosophy, and in one or more of the subjects of the secondary curriculum at the option of the candidate. The course is planned especially for those holding the degree of Bachelor of Arts who desire to prepare themselves more carefully either for high-school teaching or for work as principals and superintendents. Young men and young women who propose to take up this work permanently will find it advisable to do graduate study either immediately upon receiving the Bachelor's degree or after a period of practical experience in teaching.

THE DEGREE OF BACHELOR OF ARTS (IN EDUCATION)

The degree of Bachelor of Arts (in Education) is granted to present candidates on the following conditions:

A. The completion of college courses amounting to one hundred and twenty (120) credits, in addition to the required exercises in drill, gymnasium, and physical education. The courses selected must be approved by the committee in charge. No student shall elect less than fourteen or more than seventeen hours a week without special permission. A credit is one hour a week through one semester.

B. They must have completed Philosophy 1-2 or 5 and Courses 1 and 2 or Course 3 in Education with additional work in Education so as to make a total of eighteen (18) credits including those specified in Philosophy.

C. Enough courses shall be taken in at least three departments concerned with the work of the secondary school to secure one major and two minors. A minor requires not less than twelve (12) credits and a major not less than eighteen (18) credits in one department. Only in exceptional cases will the minimum mentioned be accepted. Usually the minor will demand from fifteen to eighteen credits, with a corresponding increase for the major, depending upon the combination which the student has selected with a view to future teaching.

D. Each candidate for graduation must show an average of scholarship through four years of college work indicated by at least as many marks of *good* as of *pass*, and must have an average of *good* in the courses presented for his major.

E. A maximum of eighteen credits is elective from the laboratory and shop courses in the Manual Arts and Agriculture, but, in addition, credit is allowed for allied courses toward the Bachelor's degree in the case of students who desire to specialize in Manual Training, Domestic Art, Domestic Science, or Agriculture.

EXAMINATIONS

At the close of each semester examinations are held and students are reported as *excellent*, *good*, *passed*, *incomplete*, *conditioned*, or *failed*.

An *incomplete* must be removed within one month from the opening of the following semester, or it becomes a *condition*.

A *condition* not made up before the subject is offered again becomes a *failure*, subject to rules governing failures. *Failures* must be pursued again in class. A student who at any time is deficient in more than half a year's work loses his class rank and is regarded as a member of the next lower class. Students whose absences in any term exceed four weeks in the aggregate are not permitted to take the term examinations without special permission of the Faculty.

FAILURE TO KEEP UP WITH THE CLASS

Any student receiving conditions or failures in 60 per cent of the work of the first semester shall be dropped from the rolls and shall not be allowed to re-enter the University until the opening of the following year.

Any student failing to pass in one half of the work of any year shall not be allowed to register until reinstated by action of the Faculty upon recommendation of the committee in charge.

GRADUATION WITH DISTINCTION

The Bachelor's degree with distinction is granted to students of this College on the following conditions:

A. The degree with distinction is based on special excellence in the major subject.

B. Students who wish to be candidates for this degree must register before the beginning of the senior year, and are advised to register upon entering the College.

C. At the time of application the student must have an average of *good* in all of his previous work. (For the purpose of this count one *excellent* shall balance one *pass*.)

D. To receive the degree with distinction the student must meet all the conditions applying to the ordinary degree, must show a record higher than *pass* in four-fifths of all his work, must present a satisfactory thesis upon his major subject by May first of the senior year, must comply with the special requirements of the department chosen, must be recommended to the Faculty for special excellence, and be approved by the vote of the Faculty.

OBSERVATION AND PRACTICE TEACHING

In November, 1907, a small school was installed in temporary quarters provided by the Regents. Plans were put into effect for the organization of a six-year course from the seventh to the twelfth years inclusive. The first class was graduated from this six-year University High School in June, 1912. The school is now housed in the building erected for the use of the College of Education and well equipped for the conduct of secondary school work. Its primary purpose is to afford prospective high-

school teachers an opportunity to gain by observation and to some extent by practice familiarity with the instruction and management proper to a school of this grade.

The critical observation of good teaching and the practice of teaching under skilled supervision form a most important part of the preparation of the teacher. These opportunities, it was recognized from the first, can be furnished only in a school organized under the direct control of this College.

COMMERCIAL TRAINING

No definite course is now prescribed for those who are planning to teach business subjects (including Commercial Geography) in the high schools, but all are advised to take at least a three years' course in Economics and to elect courses also in Political Science and in History. Each student is advised further to select work in Rhetoric, in English Literature, and in one modern foreign language.

Students who expect to teach Commercial Geography will do well to select courses in some of the following subjects: Essentials of Physical Geography, Advanced General Chemistry, Industrial Botany, Economic Zoology, Applied Geology, and Anthropology. In Economics, courses are suggested in Elements of Economics, in Economic Geography, in Industrial and Commercial History, the Principles of Accounting, and the Elements of Business Law. These are general suggestions for those who wish to prepare themselves for the teaching of commercial subjects, but each candidate should very early consult with the committee in regard to the outlining of his entire course.

MANUAL TRAINING

The increasing demand for teachers who are able not only to handle one or two of the ordinary high-school subjects, but also to direct the manual training work of the elementary and of the high-school grades, is straining the facilities of our training schools for teachers in Minnesota. This college is not yet in a position to provide adequate facilities, but is able to offer at least introductory courses of this kind. Young men who desire to prepare themselves for manual training work may register in the college for courses of this description. By utilizing the shops on the campus and other opportunities here offered, future manual training teachers may prepare themselves both in woodwork and in ironwork. With these, students may also unite courses in Descriptive Geometry, in Mechanical Drawing, and in allied subjects, and in this way they may secure a fairly satisfactory preparation for the teaching of these branches in connection with some of the regular high-school studies.

HOME ECONOMICS

Domestic Art and Domestic Science are being added each year to the school course in an increasing number of Minnesota towns. Specially

trained candidates for this kind of teaching can be prepared only in a very technical course, but all teachers should have some introductory training in this field.

Students who are interested in this line of work will be directed early in their college course in the selection of foundation work in Economics, Geography, Chemistry, Physics, and other related subjects, and will thus be prepared to elect during the last year or two some of the more technical instruction in Home Economics.

TEACHERS' COURSES IN SPECIAL METHODS

Instruction and criticism with reference to the special method of teaching certain subjects will be given by the principal and teachers of the University High School. Below is given a list of additional teachers' courses offered by different departments. A full description of each course appears elsewhere in this bulletin under the work of the department concerned.

No.	Department	Credits	Instructor
*31-32.	Animal Biology.....	2	Sigerfoos
121-122.	Botany.....	6	Clements
20.	Chemistry.....	1	Cohen
1-2.	English.....	6	Craig, Beach, and Northrop
60.	German.....	1	Moore
16.	History.....	3	Krey
101.	Latin.....	3	Pike
102.	Latin.....	3	Pike
54.	Mathematics.....	1	Shumway
26-27.	Music.....	4	Kendall
92.	Physics.....	1	A. Zeleny

*Odd numbers indicate first-semester courses, even numbers, second-semester courses. A combination of the two (e. g., 5-6) indicates courses continuing through the year. In the case of courses repeated the second semester, the suffix *a* indicates first semester, the suffix *b* indicates second semester.

COURSES FOR TEACHERS ENGAGED IN SCHOOL WORK

The College of Education and some departments in other colleges offer certain courses open to teachers actively engaged in school work. Some of these courses come on Saturdays, some between two and five or six o'clock on other days.

A teacher who wishes to pursue work within his own special field can frequently make arrangements with the University department concerned, whereby he can do such work at times suited to his convenience. Fuller information regarding the possibility of making such arrangements may be secured from the Dean of the College of Education and from the respective departments.

The following professional courses, though in some cases open to other students, have been especially arranged by the College of Education for

teachers, and have been scheduled at times believed to be convenient for them.

No.	Title of Course	Credits	Instructor
5-6.	History of Education.....	3	Pittenger
21.	History of Religious Education.....	1	Swift
22.	Principles of Religious Education.....	1	Swift
111.	Secondary Education.....	3	James
124.	School Systems.....	3	James
131.	Hist. Sources of Education.....	2	Swift
133.	Foreign Schools.....	4	Swift
142.	Industrial Training.....	3	Rankin

EXTENSION AND CORRESPONDENCE COURSES

The College plans to make available, through the General Extension Division, as far as possible, its resources in teachers and equipment to all the school systems of Minnesota, particularly those of towns in the neighborhood of the Twin Cities. It will be possible, from time to time, to secure from the College a series of weekly or fortnightly lectures upon almost any of the ordinary branches of higher study.

Correspondence courses have been organized by members of the Faculty in all of the subjects required for the State Professional Certificate and in many branches of the secondary curriculum. A special bulletin of the General Extension Division contains information in regard to these.

THE SUMMER SESSION

In close connection with the work of this College, a Summer Session is conducted by the University for the benefit not only of college students, but of teachers and of other men and women whose occupations prevent their attendance during the academic year. Students who prove their capacity may be allowed to register during the regular semesters for additional work, and by attending the summer courses may complete the credits necessary for the Bachelor's degree in three years. Teachers will be especially interested in the opportunity thus afforded by the University for special preparation along the various lines required by the State Professional Certificate, as well as in the usual subjects of undergraduate and graduate study.

THE UNIVERSITY TEACHER'S CERTIFICATE

The University Teacher's Certificate is granted to all graduates of the College of Education and to those graduates of the College of Science, Literature, and the Arts who complete Philosophy 1-2 or 5, and Courses 1 and 2 or Course 3 in Education, with additional work in Education so as to make a total of fifteen credits including those specified in Philosophy and who secure on the basis of excellent scholarship one major recommendation as qualified for teaching from a department of that College concerned with some branch of the secondary curriculum.

SPECIAL LECTURES

In addition to the courses announced for the College of Education, special lectures will be given from time to time, open to all students, by men closely identified with public education in Minnesota. Educational organization, ideals, and methods will be treated from the point of view of those concerned with the State Department of Education, the inspection of state graded and high schools, the state normal schools, city school systems, and with the conduct of schools in smaller communities.

Public lectures will be given also by men familiar with the educational conditions, experiments, and tendencies in other states.

DEPARTMENTAL STATEMENTS

EDUCATION

Professors GEORGE F. JAMES, ALBERT W. RANKIN, FLETCHER H. SWIFT;
Assistant Professors RAYMOND A. KENT, SAMUEL QUIGLEY; Instruc-
tors CHARLES M. HOLT, BENJAMIN F. PITTENGER.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits, together with reinforcing subjects selected from History, Philosophy, Economics, Politics, sciences, and languages according to the special aim of the individual.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Hist. of Education to Reformation.	3	Jr., sr.	Phil. 1-2 or 5
2.	Hist. of Modern Education.....	3	Jr., sr.	Phil. 1-2 or 5
3a.	Brief History of Education.....	3	Jr., sr.	Phil. 1-2 or 5
3b.	Brief History of Education.....	3	Jr., sr.	Phil. 1-2 or 5
5.	History of Education.....	3	Teachers only	Phil. 1-2 or 5
6.	History of Education.....	3	Teachers only	Phil. 1-2 or 5
19a.	Technique of Reading.....	3	Sr.	None
19b.	Technique of Reading.....	3	Sr.	None
21.	Hist. of Religious Education.....	1	Jr., sr.	None
22.	Prin. of Religious Education.....	1	Jr., sr.	None
101.	Principles of Teaching.....	3	Sr., grad.	1 and 2, or 3
102.	Adv. Educational Psychology.....	3	Sr., grad.	Six credits
104.	Philosophy of Education.....	3	Jr., sr., grad.	1 and 2, or 3
105.	Principles and Organization of El. Teaching.....	3	Sr., grad.	1 and 2, or 3
106.	Rural Education.....	3	Sr., grad.	Six credits
107.	Current Problems in El. Teaching.	2	Sr., grad.	105
111.	Secondary Education.....	3	Sr., grad.	1 and 2, or 3
112.	Principles and Organization of Sec. Teaching.....	3	Jr., sr., grad.	1 and 2, or 3
114.	Current Problems in Sec. Teaching	2	Sr., grad.	1 and 2, or 3 and one other 3-credit course
115a.	Practice Teaching.....	3	Sr., grad.	None
115b.	Practice Teaching.....	3	Sr., grad.	None
120.	Classroom Management.....	3	Jr., sr., grad.	1 and 2, or 3
121a.	School Supervision.....	3	Sr., grad.	1 and 2, or 3
121b.	School Supervision.....	3	Sr., grad.	1 and 2, or 3
124.	Comparative Study of School Systems.....	3	Sr., grad.	1 and 2, or 3
126.	Organization of Higher Educ.....	1	Sr., grad.	Six credits
131.	Historical Sources of Educ.....	2	Sr., grad.	1 and 2, or 3
132.	Selected Problems in Educational History.....	2	Sr., grad.	1 and 2, or 3
133-134.	Foreign School Systems.....	2	Jr., sr., grad.	1 and 2 or 3
141.	School Sanitation and Public Health.....	3	Sr., grad.	1 and 2, or 3
142.	Principles and Practice of Industrial Training.....	3	Sr., grad.	Six credits

INTRODUCTORY COURSES

1. HISTORY OF EDUCATION TO THE REFORMATION. The purpose of the course is to arouse an interest in educational problems, to secure some perspective for use in current investigation, with some command of the facts of educational history and some ease in the methods of historical study. Education as one phase of civilization and the connection of schools with other social institutions. Lectures, assigned readings, discussions, and reports. SWIFT, PITTENGER.
2. HISTORY OF MODERN EDUCATION. The development of the various national systems of public instruction; different types of educational theory, in connection with the men who first advanced them and the schools in which they were first put into effect. SWIFT, PITTENGER.
- 3a. BRIEF HISTORY OF EDUCATION. The origin and development of schools, more particularly in the modern period, as a preparation for the understanding of the educational systems, theories, and practices of the present. SWIFT, PITTENGER.
- 3b. BRIEF HISTORY OF EDUCATION. Same as Course 3a.
5. HISTORY OF EDUCATION (for teachers only). The origin and development of schools, more particularly in the modern period, as a preparation for the understanding of the educational systems, theories, and practices of the present. PITTENGER.
6. HISTORY OF EDUCATION. Same as Course 5.
- 19a. TECHNIQUE OF READING. Open only to a limited number of seniors after individual tests by the instructor. This course is given in two sections for those who are specializing in this work and for those noticeably deficient in voice control. HOLT.
- 19b. TECHNIQUE OF READING. Same as Course 19a.
21. HISTORY OF RELIGIOUS EDUCATION. The development of the religious consciousness; aims, means, and methods of religious instruction among certain types selected from ancient and modern civilizations. SWIFT.
22. PRINCIPLES OF RELIGIOUS EDUCATION. Principles of education viewed from the standpoint of their relation and application to religious activities and institutions; the means, methods, and materials of religious instruction. SWIFT.

GENERAL COURSES

101. PRINCIPLES OF TEACHING. Educational theory, including a somewhat detailed study of the principles on which is based the present practice in teaching. QUIGLEY.
102. ADVANCED EDUCATIONAL PSYCHOLOGY. The experimental and statistical methods used in the study of problems in development and educa-

tion, together with the results of researches in these lines; training for independent psychological investigation of such problems. MINER.

104. PHILOSOPHY OF EDUCATION. Correlation of the various educational ideals drawn from biological and psychological studies, with special consideration of recent social phases of education. QUIGLEY.
105. PRINCIPLES AND ORGANIZATION OF ELEMENTARY TEACHING. The course of study of the elementary school and the best methods of instruction. For all students who expect to teach in the high schools or to be principals or superintendents. Lectures, assigned readings, discussions, and reports. No credit is given in this course to graduates of normal schools who have received one year's credit at the University. QUIGLEY.
106. RURAL EDUCATION. Especially arranged for those who expect to engage in some phase of rural education: teaching, supervision of associated districts, normal training work, etc. The aims of rural education; the status of the rural school: recent improvements, further needs, the future; selecting and interpreting the curriculum; adapting the school to home and farm life and community interests; the training of teachers and supervisors; essentials of rural-school management. QUIGLEY.
107. CURRENT PROBLEMS IN ELEMENTARY TEACHING. A seminar course, involving a general discussion of some current problems in elementary education, one or two of which are worked out practically by the student under the direction of the instructor through readings, the visiting of schools, and through class discussions. QUIGLEY.
111. SECONDARY EDUCATION. Secondary education in the United States, with such references to the secondary schools of other countries as will lead to a clearer understanding of the place and function of the high school, its curriculum, the problems of present-day importance, and the relation of the high school to other parts of the system of public instruction. Lectures, reports, and discussions. JAMES.
112. PRINCIPLES AND ORGANIZATION OF SECONDARY TEACHING. Lectures on the general methods of secondary teaching, assigned readings, reports, and discussions. More particularly for those who expect to teach in high schools. RANKIN.
114. CURRENT PROBLEMS IN SECONDARY TEACHING. A seminar course for advanced students, preferably with teaching experience, who wish to pursue a theoretical and a practical study of some current problems in connection with secondary teaching. Lectures, class discussions, readings, and the visiting of schools. KENT.
- 115a. PRACTICE TEACHING. A course in practice teaching in the various subjects of the secondary curriculum, carried on in the University High School. Before registering for this course each student must

get the approval of the instructor in charge. The course calls for one morning period throughout the week.

115b. PRACTICE TEACHING. Same as Course 115a.

120. CLASSROOM MANAGEMENT. The daily practical problems of the school-room, both in discipline and in instruction. For teachers in high schools and high-school training departments, principals, and superintendents. Observation of school work, with reports and discussions. QUIGLEY.

121a. SCHOOL SUPERVISION. Intended for students with experience in teaching. The duties of school principals and superintendents. RANKIN.

121b. SCHOOL SUPERVISION. Same as Course 121a.

124. COMPARATIVE STUDY OF SCHOOL SYSTEMS. The school systems of Germany, France, England, and the United States, with special reference to principles and methods of administration; elementary, secondary, and higher institutions, with emphasis varying in successive years. Lectures, assigned readings, reports, and discussions. JAMES.

126. ORGANIZATION OF HIGHER EDUCATION. For students who are interested in the general problems of educational administration and who look forward later to college teaching. Historical sketch of the development of the American university, with discussion of modes of organization and administration; problems of departmental teaching; questions of class instruction. JAMES.

131. HISTORICAL SOURCES OF EDUCATION. A seminar course for the intensive study of certain source material in the history of education. SWIFT.

132. SELECTED PROBLEMS IN EDUCATIONAL HISTORY. A research course for advanced students devoted to the investigation of some selected periods in the history of education. SWIFT.

133-134. FOREIGN SCHOOL SYSTEMS. A study of the current school systems of other countries with a view to possible suggestions for the development of public education in the United States. Intended especially for experienced teachers. 1914-15, German Schools. SWIFT.

141. SCHOOL SANITATION AND PUBLIC HEALTH. Text, lectures, and investigations into problems of school lighting, heating, ventilation, and other questions of school architecture and management connected with the physical well-being of the pupils. RANKIN.

142. PRINCIPLES AND PRACTICE OF INDUSTRIAL TRAINING. The principles fundamental to vocational training in the public school system, as affecting the arrangement of school years, the course of study, and the methods of teaching. Lectures, assigned readings on topics, and reports on observations of school work. RANKIN.

AGRICULTURE

Professor ASHLEY V. STORM.

Certain courses in the College of Agriculture are elective for students in Education on approval of the Executive Committee. Some of the introductory courses in the various departments are mentioned below. Students who desire to combine some agricultural courses with their preparation for positions of school supervision are requested to have a preliminary conference with the Dean of the College of Education.

COURSES

Agronomy

No.	Title of Course	Credits	Offered to	Prereq. courses
1.	Farm Crops I.....	3	Fr.	None
3.	Farm Machinery.....	3	Sr.	None
5.	Farm Crops II.....	3	Jr.	Bot. 1-2, Farm Crops I
101.	Farm Management I.....	3	Sr.	Economics 1, Farm Crops I
102.	Farm Management II.....	3	Sr.	Economics 1, Farm Crops I
103.	Principles of Genetics.....	3	Sr.	Bot 1-2,Zool.1-2
104.	Grain and Corn Judging.....	3	Sr.	1 yr. Bot.; Farm Crops I

Agricultural Education

151a,151b. Organization and Management... 3

Dairy and Animal Husbandry

1.	Breeds and Types of Live Stock..	3	Soph., jr.	None
4.	Stock Judging.....	1	Jr.	1 and 3
26.	Elements of Dairy Husbandry....	3	Fr.	None

Soils

3.	Soil Physics and Management....	3	Jr.	1 yr. Chemistry
4.	Soil Fertility and Fertilizers.....	3	Jr.	3

Vegetable Pathology and Botany

3.	Agricultural Botany.....	3	Soph., jr., sr.	1 yr. Botany
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AGRONOMY

1. Farm Crops I. OLSON.
3. Farm Machinery. BASSETT.
5. Farm Crops II. ARNY.
101. Farm Management I. ARNY.
102. Farm Management II. ARNY.
103. Principles of Genetics. BULL.
104. Grain and Corn Judging. ARNY.

AGRICULTURAL EDUCATION

- 151a or 151b. Organization and Management. STORM.

DAIRY AND ANIMAL HUSBANDRY

1. Breeds and Types of Live Stock. H. R. SMITH, MONTGOMERY, ASHBY.
4. Stock Judging. H. R. SMITH, MONTGOMERY, ASHBY, PATERSON.
26. Elements of Dairy Husbandry. HAECKER, WASHBURN.

SOILS

3. Soil Physics and Management. ALWAY, HUNGERFORD.
4. Soil Fertility and Fertilizers. ALWAY, McMILLER.

VEGETABLE PATHOLOGY AND BOTANY

3. Agricultural Botany. OSWALD.

ANIMAL BIOLOGY

Professors HENRY F. NACHTRIEB, JOHN BLACK JOHNSTON, CHARLES P. SIGERFOOS; Associate Professor HAL DOWNEY; Assistant Professor OSCAR W. OESTLUND; Instructors GEORGE D. ALLEN, CHARLES E. JOHNSON; Assistants HAROLD HANSEN, ADOLPH RINGOEN, HELEN A. SANBORN.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits together with reinforcing subjects selected from Botany, Geology, Chemistry, Physics, Sociology and Anthropology, Psychology, advanced modern languages, and additional biology.

For B.A. with Distinction, the general requirements (page 9) and six credits in the department in addition to the requirements for a major.

JOURNAL CLUB

The professors, instructors, and advanced students of the department meet once a week to review and discuss current zoological literature and to receive reports from those carrying on investigations.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Zoology.....	6*	All	None
7-8.	Histology-Embryology.....	6*	Soph., jr., sr.	1-2
12.	Technique.....	3	Soph., jr., sr.	1-2 and 7
15-16.	General Physiology.....	6*	Soph., jr., sr.	1-2
19-20.	Comparative Anatomy of Vertebrates.....	6*	Soph., jr., sr.	1-2
23-24.	Entomology.....	6*	Soph., jr., sr.	1-2
28.	Ornithology.....	3	Soph., jr., sr.	1-2
31-32.	Nature Study.....	2	Soph., jr., sr.	12 credits
51.	Protozoology.....	3 } †	Jr., sr.	9 credits inc. 1-2
56.	Morphology of Invertebrates.....	3 }	Jr., sr.	9 credits inc. 1-2
79.	Mammalogy.....	2	Jr., sr.	1-2, 19-20

No.	Title	Credits	Offered to	Prereq. courses
<i>Advanced and Graduate Courses</i>				
101-102.	Advanced Entomology.....	6	Jr., sr., grad.	1-2, 23-24
115-116.	Morphology of Vertebrates.....	6 or 12	Jr., sr., grad.	1-2, 7-8 or 19-20
119-120.	Vertebrate Histology.....	6	Sr., grad.	1-2, 7-8, 12
123-124.	Blood of Vertebrates.....	6 or 12*	Sr., grad.	1-2, 7-8, 12, 137-138; reading knowledge of French and German
131-132.	Embryology of Invertebrates.....	6	Jr., sr., grad.	1-2, 7-8
137-138.	Embryology of Vertebrates.....	6	Jr., sr., grad.	1-2, 7-8, 12
143-144.	Genetics and Eugenics.....	6	Sr., grad.	1-2, 7-8, 15-16
161-162.	Problems.....	6 or 12	Sr., grad.	1-2 and other courses prescribed by department

*Both semesters must be completed before credit is given for the first semester.

†May be combined for a year course.

INTRODUCTORY COURSES

- 1-2. GENERAL ZOOLOGY. A survey of the animal kingdom, emphasizing the principles of structure, physiology, embryology, classification, and evolution of animals. Textbook, lectures, and quizzes. SIGERFOOS, ALLEN, RINGOEN, SANBORN.
- 7-8. HISTOLOGY AND EMBRYOLOGY. A comparative microscopic study of the origin and structure of the tissues of vertebrates and invertebrates, and of the organs of mammals. A preparatory course for most of the advanced courses. Textbook, lectures, and laboratory. DOWNEY and Assistant.
12. HISTOLOGICAL TECHNIQUE. Practical work in the preparation of histological and embryological material. DOWNEY.
- 15-16. GENERAL PHYSIOLOGY. The functional characteristics of living substance as seen in the cell, tissues, organs, and organisms; theories of the origin of life and death. Textbook, lectures, demonstrations, and laboratory. NACHTRIEB and Assistant.
- 19-20. COMPARATIVE ANATOMY OF VERTEBRATES. First semester: anatomy of lower vertebrates, cyclostomes to reptiles or birds inclusive. Second semester: mammalian anatomy with the cat as type. Textbook, lectures, and quizzes, laboratory syllabus, and laboratory work. JOHNSON and Assistant.
- 23-24. ENTOMOLOGY. Elements of entomology leading up to a discussion of the principles of taxonomy and their application to the classification of insects. Textbook, lectures, quizzes, and laboratory work. OESTLUND and Assistant.
28. ORNITHOLOGY. The study of the structure and classification of birds with special reference to the common birds of Minnesota. Labora-

- tory, textbook, lectures, and quizzes. Some field work. JOHNSON and Assistant.
- 31-32. NATURE STUDY. Discussions, reference, field, and laboratory work once a week through the year. Especially for the fitting of teachers in secondary schools. SIGERFOOS.
51. PROTOZOOLOGY. Lectures, reference and laboratory work on the structure and life-histories of Protozoa, with special reference to the relations of the Protozoa to diseases of animals. SIGERFOOS.
56. MORPHOLOGY OF INVERTEBRATES. An intensive study of the Crustacea and some of the smaller phyla of the animal kingdom. Mainly reference and laboratory work. SIGERFOOS.
79. MAMMALOGY. The classification, natural history, and economic aspects of North American mammals with special reference to the mammals of Minnesota. Open to those able to work independently under direction. Laboratory, textbook, and reference work. JOHNSON.

FOR GRADUATE AND UNDERGRADUATE STUDENTS

- 101-102. ADVANCED ENTOMOLOGY. Advanced work in the ecology and taxonomy of insects. Lectures, laboratory and field work. OESTLUND.
- 115-116. MORPHOLOGY OF VERTEBRATES. An advanced course in comparative or special anatomy of vertebrates, including anatomical technique. Students qualified will be directed into lines of research. Conference, reference, and laboratory work. JOHNSON.
- 119-120. VERTEBRATE HISTOLOGY. Primarily advanced work on vertebrate tissues. Conference, reference, and laboratory work. DOWNEY.
- 123-124. BLOOD OF VERTEBRATES. A comparative study of blood and blood-forming organs of vertebrates. The major portion of the time is devoted to research. DOWNEY.
- 131-132. EMBRYOLOGY OF INVERTEBRATES. Reference and laboratory work on a selected series of invertebrates. SIGERFOOS.
- 137-138. EMBRYOLOGY OF VERTEBRATES. The organogeny of the vertebrates with special reference to the circulatory system. Kellicott's *Outlines of Chordate Development*, reference, conference, and laboratory work. NACHTRIEB.
- 143-144. GENETICS AND EUGENICS. Facts and theories of heredity and the application of the laws governing inheritances for the improvement of a race. Lectures, reference, conference, and laboratory work. Not offered in 1914-15. NACHTRIEB.
- 161-162. PROBLEMS. Special advanced work along any line for which the department is properly equipped. NACHTRIEB, SIGERFOOS, DOWNEY, OESTLUND, JOHNSON.

ASTRONOMY

Professor FRANCIS P. LEAVENWORTH; Assistant Astronomer WILLIAM O. BEAL.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, including Courses 51-52 and 101-102 (the latter taken as a three-hour course) or Courses 13-14 and 101-102 (the latter taken as a three-hour course).

For a Major, eighteen credits, including Courses 51-52 and 101-102 (the latter taken as a six-hour course), together with five additional courses and reinforcing subjects (thirty credits) selected* from Mathematics, Physics, Mechanics, Chemistry, Geology, and additional Astronomy.

ASTRONOMICAL OBSERVATORY

The Astronomical Observatory contains a ten and one-half inch telescope, furnished with a third lens for converting it into a photographic telescope; a five-inch star camera; a filar micrometer; a spectroscope by Brashear; a meridian circle and zenith telescope; a Repsold photographic measuring machine, a chronograph, and astronomical clocks.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
11.	Descriptive Astronomy.....	3	Soph., jr., sr.	None
13-14.	Descriptive Astronomy and Observatory Practice.....	6	Soph., jr., sr.	None
22.	Spherical Astronomy.....	3	Soph., jr., sr.	1 yr. Math.
51-52.	General Astronomy.....	6	Jr., sr.	1 yr. Math.
101-102.	Practical Astronomy.....	6 or 12	Jr., sr.	Math. 7 and 11

11. DESCRIPTIVE ASTRONOMY. Lectures on the elements of astronomy, illustrated by lantern slides. LEAVENWORTH.
- 13-14. DESCRIPTIVE ASTRONOMY AND OBSERVATORY PRACTICE. Lectures on the elements of astronomy, illustrated by lantern slides, with laboratory work at the Observatory. BEAL.
22. SPHERICAL ASTRONOMY. Fundamental formulae of spherical trigonometry developed and applied to problems in astronomy. BEAL.
- 51-52. GENERAL ASTRONOMY. A thorough study of the general principles of astronomy, illustrated by lantern slides and telescopic observations. LEAVENWORTH.
- 101-102. PRACTICAL ASTRONOMY. Theory and use of astronomical instruments in determining time, latitude, longitude, positions of heavenly bodies; astronomical photography, with measures of plates; study of the method of least squares. LEAVENWORTH.

BOTANY

Professors FREDERIC E. CLEMENTS, CARL OTTO ROSENDAHL, JOSEPHINE E. TILDEN; Assistant Professors HERBERT F. BERGMAN, FREDERIC K. BUTTERS, NED L. HUFF; Assistants DONALD FOLSOM, FRANCES L. LONG, HARVEY STALLARD.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits including Courses 1-2, 5-6.

For a Major, Courses 1-2, 5-6, together with two advanced courses.

COURSES

Introductory Courses

No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Botany.....	6*	All	None
5-6.	Advanced Botany.....	6	Soph., jr., sr.	1-2

Special and Technical Courses

7-8.	Plant Foodstuffs and Textiles....	6	Jr., sr.	5-6
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General Advanced Courses

101-102.	Plant Physiol. and Ecology.....	6	Jr., sr., grad.	5-6
111-112.	Flowering Plants.....	6	Jr., sr., grad.	5-6
119-120.	Industrial Botany.....	6	Jr., sr., grad.	5-6
121-122.	Plant Studies and Methods.....	6	Jr., sr., grad.	5-6

*Both semesters must be completed before credit is given for the first semester.

INTRODUCTORY COURSES

1-2. GENERAL BOTANY. Laboratory study of the structure of flowering plants, their organs and tissues, followed by a brief study of common types of flowerless plants, leading to the origin of the flower and seed habit; greenhouse study of the behavior of plants; field work, classification of trees and shrubs, and of spring flowers. BUTTERS, HUFF, BERGMAN, FOLSOM, STALLARD, LONG.

5-6. ADVANCED BOTANY. Greenhouse and field study of the important flower families; detailed study of the evolution of land plants, and of the life-history of flowering plants, including the origin of pollen and ovules, pollination, fertilization, and the development of the embryo and seed. BUTTERS, HUFF, BERGMAN, FOLSOM.

SPECIAL AND TECHNICAL COURSES

7-8. PLANT FOODSTUFFS AND TEXTILES. A study of the botany of foods, textiles, and fabrics, with reference to their source, structure, preparation, adulteration, etc., together with an inquiry into the relation of plants to household processes and problems. Open to technical students who have completed Course 1-2, and to academic students who have completed Courses 1-2 and 5-6. TILDEN.

GENERAL ADVANCED COURSES

- 101-102. **PLANT PHYSIOLOGY AND ECOLOGY.** Study of the factors which make the plant's home, viz., water, light, soil, heat, etc.; response of the plant to its home, absorption, transport, water-loss, foodmaking, storage, growth, fertilization, and reproduction; adaptation of plants to their various homes, and the origin of new forms by selection, adaptation, mutation, and hybridization; structure and development of vegetation, i. e., grouping, migration, competition, acclimatization, invasion, succession, zonation, etc., of plants. CLEMENTS.
- 111-112. **FLOWERING PLANTS.** The course is designed to afford the student an opportunity to become proficient in the determination of plant species and plant types, as well as to show the genetic development and relationships of the flowering plants. ROSENDAHL.
- 119-120. **INDUSTRIAL BOTANY.** A study of origin, distribution, and cultivation of plants yielding products of economic value, the nature and use of these products, and the processes by which they are obtained from the plants. Lectures, demonstrations, topics, and laboratory work. Open to technical students who have completed Course 1-2, and to academic students who have completed Courses 1-2 and 5-6. TILDEN.
- 121-122. **PLANT STUDIES AND METHODS.** A course for teachers and for students intending to teach; the subjects of nature study and high-school botany are presented as they are to be taught and not from the university point of view; the material is taken up in detail in its proper sequence, the training in method is afforded as far as possible by practice in the Elementary School of the College of Education. CLEMENTS.

CHEMISTRY

Professors GEORGE B. FRANKFORTER, CHARLES F. SIDENER; Associate Professor EVERHART P. HARDING; Assistant Professors IRA H. DERBY, FRANCIS C. FRARY, WILLIAM H. HUNTER, EDWARD E. NICHOLSON; Instructors FRANK W. BLISS, LILLIAN COHEN, J. GERHARD DIETRICHSON, WOLF KRITCHEVSKY, LILLIAN L. NYE, EARL PETTIJOHN, FREDERICK W. POPPE, WOLDEMAR STERNBERG, EARLE K. STRACHAN, STERLING TEMPLE; Assistants CURTIS W. APPLEBY, MARK W. BRAY, ALFRED W. GAUGER, HENRY HOFFMAN, HENRY PETERSON, RALPH E. PORTER.

REQUIREMENTS OF THE DEPARTMENT

For a Major, eighteen credits. Courses 1-2 or 3-4 and 7-8, Course 11-12 or Course 111-112, and Course 20, are recommended, together with six additional credits in physical science. Students may select additional work, on the approval of the Committee, from other courses announced in Chemistry.

For a Minor, twelve to eighteen credits with six in physical science.

COURSES				
No.	Title	Credits	Offered to	Prereq. courses
<i>Division of General and Inorganic Chemistry</i>				
1-2.	General Chemistry.....	6*	Those entering without Chemistry	None
3-4.	Adv. Gen. Chemistry and Qualitative Analysis.....	6*	All	Entrance credit in Chemistry
7-8.	Qualitative Analysis.....	6*	Soph., jr., sr.	1-2
10.	Glass Blowing.....	1	Jr., sr.	None
20.	Teachers' Course.....	1	Sr.	3-4 or 7-8
21-22.	Household and Sanitary Science..	6*	Jr., sr.	1-2 or 3-4
169-170.	Chemistry of the Rare Elements..	4*	Jr., sr.	11-12
<i>Division of Analytical Chemistry</i>				
11-12.	Quantitative Analysis.....	8*	Soph., jr., sr.	3-4 or 7-8
<i>Division of Organic Chemistry</i>				
111-112.	Organic Chemistry.....	8*	Jr., sr.	7-8 or 11-12
114.	Organic Analysis.....	3	Jr., sr.	112, Physics 2 and 4
115.	Adv. Organic Chemistry.....	2	Sr.	111-112
116.	Theoretical Organic Chem.....	2	Sr.	111-112
117.	The Coal-Tar Dyes.....	2	Sr.	111-112
118.	Chemistry of the Essential Oils...	2	Sr.	111-112
<i>Division of Physical Chemistry</i>				
121-122.	Physical Chemistry.....	4*	Jr., sr.	112, Physics 2 and 4
123-124.	Physico-chemical Laboratory	2*	Jr., sr.	See statement
125-126.	Adv. Physical Chemistry.....	6*	Sr.	121-122
128.	Radiochemistry.....	2	Jr., sr.	3-4 or 7-8, Physics 2 and 4
<i>Division of Technological Chemistry</i>				
131-132.	Food Analysis.....	4*	Sr.	11-12
<i>Division of Industrial Chemistry</i>				
15.	Photochemistry.....	2	Jr., sr.	3-4 or 7-8
16.	Color Photography.....	2	Jr., sr.	15

*Both semesters must be completed before credit is given for the first semester

DIVISION OF GENERAL AND INORGANIC CHEMISTRY

- 1-2. GENERAL CHEMISTRY. The course includes a study of the metallic and non-metallic elements, with a brief introduction to organic chemistry. FRANKFORTER, COHEN, and Assistants.
- 3-4. ADVANCED GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. Lectures and laboratory work. A discussion of the general chemical theories and laws, with qualitative analysis. FRANKFORTER, NICHOLSON, BLISS, TEMPLE, DIETRICHSON, POPPE.

- 7-8. **QUALITATIVE ANALYSIS.** The course includes the general reactions of the metals and acids with their qualitative separation. Besides this mechanical work, the ionic theory and the law of mass action are discussed, with special reference to common qualitative reactions. NICHOLSON, BLISS, TEMPLE, and Assistants.
10. **GLASS BLOWING.** The course includes the methods used in the construction and repair of simple glass apparatus. FRARY.
20. **TEACHERS' COURSE.** Offered to those who are interested in the teaching of chemistry. COHEN.
- 21-22. **HOUSEHOLD AND SANITARY SCIENCE.** Elective for women. Offered by the School of Chemistry in coöperation with the Departments of Bacteriology, Botany, Animal Biology, Hygiene, Economics, Sociology, and Mechanical and Municipal Engineering. The course includes, for the most part, a discussion of foods and foodstuffs from the botanical, biological, chemical, and physiological points of view; also a discussion of sanitary engineering, hygiene, heating, lighting, and ventilation. FRANKFORTER *et al.*
- 169-170. **CHEMISTRY OF THE RARE ELEMENTS.** The descriptive chemistry of the rare elements and their analytical separation. NICHOLSON.

DIVISION OF ANALYTICAL CHEMISTRY

- 11-12. **QUANTITATIVE ANALYSIS.** The course includes a general discussion of quantitative methods, with laboratory work in gravimetric analysis, first semester, followed by a discussion of standard solutions and the necessary stoichiometric calculations with laboratory work in volumetric analysis, second semester. SIDENER, PETTIJOHN, STERNBERG, and Assistants.

DIVISION OF ORGANIC CHEMISTRY

- 111-112. **ORGANIC CHEMISTRY.** This course includes the aliphatic and the aromatic series with the preparation of the more important compounds. FRANKFORTER, HUNTER, KRITCHEVSKY, and Assistants.
114. **ORGANIC ANALYSIS.** Practice in elementary analysis, determination of special groups, and identification of pure compounds. HUNTER.
115. **ADVANCED ORGANIC CHEMISTRY.** The course treats of the general reactions of organic chemistry, such as substitutions, condensations, etc., in a detailed manner. HUNTER.
116. **THEORETICAL ORGANIC CHEMISTRY.** This course will take up theories which apply especially to carbon compounds, such as relation of properties to constitution, carbon valence theory, etc. HUNTER.
117. **THE COAL-TAR DYES.** The chemistry of the coal-tar dyes and their intermediate products. KRITCHEVSKY.

118. THE CHEMISTRY OF THE ESSENTIAL OILS. A discussion of the constituents of the essential oils, including the terpenes and perfumes. FRANKFORTER.

DIVISION OF PHYSICAL CHEMISTRY

- 121-122. PHYSICAL CHEMISTRY. A consideration of the theories and laws, phenomena, and processes which form the basis of chemical science. Charts, models, and experiments employed to supplement and illustrate the discussions. DERBY.
- 123-124. PHYSICO-CHEMICAL LABORATORY PRACTICE. Physico-chemical methods and measurements. Open only to students pursuing Course 121-122, or who have had it or its equivalent. DERBY.
- 125-126. ADVANCED PHYSICAL CHEMISTRY. The theories of chemistry treated systematically from the standpoint of thermodynamics and the molecular theory. Suited to the needs of candidates for the higher degrees and all others interested in the advances of modern physical chemistry. STRACHAN.
128. RADIOCHEMISTRY. The occurrences, methods of isolation and investigation, and the physico-chemical properties of the radioactive substances, together with a brief consideration of the chemical, geological, and biological bearing of the subject. DERBY.

DIVISION OF TECHNOLOGICAL CHEMISTRY

- 131-132. FOOD ANALYSIS. The course includes the chemical analysis of the various food products and the detection of the common adulterants. HARDING.

DIVISION OF INDUSTRIAL CHEMISTRY

15. PHOTOCHEMISTRY. The course includes a discussion of the general principles of photochemistry and their application to dry-plate photography and the ordinary printing processes. FRARY.
16. COLOR PHOTOGRAPHY. Theory and practice in the preparation and use of orthochromatic and panchromatic plates; photography in natural colors. FRARY.

ECONOMICS

Professors JOHN H. GRAY, E. DANA DURAND, EDWARD VAN DYKE ROBINSON†; Assistant Professors J. FRANKLIN EBERSOLE, THOMAS WARNER MITCHELL, LOUIS D. H. WELD; Instructors LLOYD CROSGRAVE, H. G. HAYES; Lecturer DON D. LESCHIER.

†Absent on leave 1914-15.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits. Unless registered in a combined Academic-Professional course, students taking a major in Economics must take twelve credits in Political Science; and must take additional supporting subjects selected from other courses in Economics, Political Science, History, Sociology, Psychology, or Philosophy; or from other subjects according to individual arrangements.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>General Courses</i>				
1a.	Elements of Economics.....	3	Soph., jr., sr.	None
1b.	Elements of Economics.....	3	Soph., jr., sr.	None
3a.	Advanced Economics.....	3	Soph., jr., sr.	1
3b.	Advanced Economics.....	3	Soph., jr., sr.	1
5.	Economic Development.....	3	Soph., jr., sr.	None
7.	Indust. Hist. since 1750.....	3	Soph., jr., sr.	None
31-32.	Physical and Human Geography..	6*	Soph., jr., sr.	None
101.	Statistics.....	3	Jr., sr., grad.	6 credits inc. 1
<i>Production</i>				
12.	Industries and Commerce of the United States.....	3	Soph., jr., sr.	None
13.	Economic Geography of Foreign Countries.....	3	Soph., jr., sr.	3 credits
<i>Transportation and Commerce</i>				
73.	Railway Problems.....	3	Jr., sr.	6 credits inc. 1
<i>Business Administration</i>				
34.	Business Organization.....	3	Soph., jr., sr.	1
35-36.	Accounting Principles.....	6*	Soph., jr., sr.	None
<i>Finance</i>				
42.	Financial History.....	3	Soph., jr., sr.	1
44.	Banking.....	3	Soph., jr., sr.	1
46.	Property Insurance.....	3	Soph., jr., sr.	1
145.	The Modern Business Corporation	3	Jr., sr., grad.	6 credits inc. 1
146.	Public Utilities.....	3	Jr., sr., grad.	145
<i>Economic Reforms</i>				
162.	Economic Conditions in Cities....	3	Jr., sr., grad.	6 credits inc. 1

*Both semesters must be completed before credit is given for the first semester.

GENERAL COURSES

- 1a. ELEMENTS OF ECONOMICS. Elements of economic theory, with special reference to present-day economic and social problems. Marshall, Wright and Field's *Materials* and a textbook, supplemented by lectures. GRAY, MITCHELL, EBERSOLE, WELD, HAYES, CROSGRAVE.
- 1b. ELEMENTS OF ECONOMICS. Same as Course 1a.

- 3a. **ADVANCED ECONOMICS.** An advanced course in economic theory, devoted chiefly to a study of recent theories of distribution. Assigned readings, reports, and discussions. HAYES.
- 3b. **ADVANCED ECONOMICS.** Same as Course 3a.
5. **ECONOMIC DEVELOPMENT PRIOR TO 1750.** Development of commerce and commercial policies in Europe prior to the Industrial Revolution, as a preparation for the study of modern economic conditions and theories. Textbook, supplemented by lectures and assigned readings. Alternates with Course 71. Not given in 1914-15. ROBINSON.
7. **INDUSTRIAL HISTORY SINCE 1750.** Economic effects of inventions, wars, political changes, increased supply of precious metals, improved transportation and modifications of business organization in chief European countries and the United States. Not given in 1914-15.
- 31-32. **PHYSICAL AND HUMAN GEOGRAPHY.** First semester: physical features of the earth and agencies effecting changes in them; effects of various land forms on activities of man; elements of climatology and oceanography; topographic map interpretation; field excursions. POSEY.
- Second semester: economic and political development in relation to nature; geographic and economic interpretations of history; economic progress as a phase of adaptation to environment. Textbook, lectures, and reports on special topics. HAYES.
- Constitutes a unit course for which no credit is given until both semesters are completed. May be counted toward a major or a minor in the Department of Geology or in the Department of Economics.
101. **THEORY AND PRACTICE OF STATISTICS.** Principles of collection, tabulation, and interpretation of statistical material, illustrated by present-day statistical data. Lectures, assigned readings, and special investigations by individual members of the class. DURAND.

PRODUCTION

12. **INDUSTRIES AND COMMERCE OF THE UNITED STATES.** Agricultural, mining, and manufacturing industries and internal and foreign commerce. Industries and commerce of the several sections of the country. Leading individual industries: geographical distribution, methods of organization, production and marketing, and relationships to one another. Textbook, lectures, and assigned readings. DURAND.
13. **ECONOMIC GEOGRAPHY OF FOREIGN COUNTRIES.** Economic basis of modern civilization; localization of industries; principal extractive, manufacturing, and distributive industries of leading foreign countries, especially markets for American manufactures. Textbook with lectures and special reports. HAYES.

TRANSFORMATION AND COMMERCE

73. **RAILWAY PROBLEMS.** Methods of railway organization and operation; statistics of operation and finance; economic principles of rate making and of government regulation; railroad discriminations; competition, pooling and combinations. Foreign railways. Lectures, assigned readings, and special topics. DURAND.

BUSINESS ADMINISTRATION

34. **BUSINESS ORGANIZATION.** The principles of efficiency in business operation and forms of organization to apply them; the typical departments of a business: their function, office organization and administration. Textbook, assigned readings, and lectures. MITCHELL.
- 35-36. **PRINCIPLES OF ACCOUNTING.** The purposes of accounts and principles of account classification; capital and revenue; accruals; principles of valuation; depreciation; preparation and interpretation of balance sheets; income accounts and other business statements; corporation accounts. A laboratory course with supplementary lectures. MITCHELL.

FINANCE

42. **FINANCIAL HISTORY OF THE UNITED STATES.** American experiments in monetary and fiscal legislation from colonial times to the present, with especial emphasis upon the distinction between maintaining a standard of value and the providing of a revenue for the needs of government. EBERSOLE.
44. **PRINCIPLES AND PRACTICE OF BANKING.** Contemporary banking institutions, both national and state; their incorporation, organization, administration; reserves, note issues, clearing houses, domestic and foreign exchange; the banking systems of foreign countries; and the Federal Reserve banks of the United States. EBERSOLE.
46. **PROPERTY INSURANCE.** Basic theory and critical examination of policy contracts of fire, marine, other casualty, title, and credit insurance. Textbook, lectures, and assigned readings. MITCHELL.
145. **THE MODERN BUSINESS CORPORATION.** The organizing, financing, and managing of corporations; the position of the corporation before the law; methods of accounting; the relation of the government to the corporation; the question of trusts in its various phases. GRAY.
146. **PUBLIC UTILITIES.** The economic and legal basis of classification, consideration of the relative advantages of public ownership and of public regulation. Central regulation compared with municipal regulation. The basis of rates; relative rates; rates and service. The different theories of valuation. GRAY.

ECONOMIC REFORMS

162. ECONOMIC CONDITIONS IN AMERICAN CITIES. The causes of economic dependence in American cities, the standard of living, and the constructive agencies for economic betterment. Lectures, assigned readings, and visits of inspection in the Twin Cities. LESCOHIER.

ENGLISH

Professors RICHARD BURTON†, HARDIN CRAIG, FREDERICK KLAEBER; Professorial Lecturer ELMER STOLL; Assistant Professors JOSEPH W. BEACH, OSCAR W. FIRKINS, GEORGE N. NORTHROP.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, including Course 1-2.

For a Major, eighteen to twenty-four credits, including Courses 1-2, 3, 5, 8, and 55, together with twelve credits in Rhetoric (not including Course 1-2).

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Gen. Survey Eng. Literature.	6*	Soph., jr., sr.	Rhet. 1-2
3.	Old English.	3	Soph., jr., sr.	None
4.	Advanced Old English.	3	Soph., jr., sr.	3
5a.	Chaucer.	3	Soph., jr., sr.	1-2
5b.	Chaucer.	3	Soph., jr., sr.	1-2
6.	Spenser.	3	Soph., jr., sr.	1-2
8.	Hist. of English Language.	1	Jr., sr.	3
55.	Shakespeare.	3	Jr., sr.	1-2
56.	Advanced Shakespeare.	3	Jr., sr.	55
57.	Elizabethan Literature.	3	Jr., sr.	1-2
59-60.	Modern Drama.	6*	Sr.	1-2
62.	Milton.	3	Jr., sr.	1-2
63.	19th Century Literature.	3	Jr., sr.	1-2
66.	Browning-Tennyson.	3	Jr., sr.	1-2
68.	English Novel.	3	Jr., sr.	1-2
70.	Moral Forces in Eng. Literature. .	3	Jr., sr.	1-2
72.	Eng. and Scottish Popular Ballads.	3	Jr., sr.	1-2
101.	Middle English.	2	Jr., sr., grad.	1-2 and 3, or 3 and 4
103.	Piers the Plowman.	2	Jr., sr., grad.	1-2 and 3, or 3 and 4
105.	18th Century Literature.	3	Jr., sr., grad.	1-2
108.	Romantic Movement.	3	Jr., sr., grad.	1-2
109-110.	English Humorists.	6	Jr., sr., grad.	1-2
111-112.	17th Century Prose.	6*	Jr., sr., grad.	1-2
113-114.	Drama.	6	Sr., grad.	12 credits
115.	English Idiom.	3	Jr., sr., grad.	1-2
118.	Bible as Literature.	3	Jr., sr., grad.	1-2
119-120.	Principles of Literary Criticism . .	6*	Jr., sr., grad.	1-2
121.	American Literature.	3	Jr., sr., grad.	1-2
123-124.	Meredith.	4*	Sr., grad.	See statement
125.	Biography.	2	Sr., grad.	See statement
127.	17th Century Drama.	3	Jr., sr., grad.	55, 56

*Both semesters must be completed before credit is given for the first semester.

†Absent on leave, 1914-15.

- 1-2. GENERAL SURVEY OF ENGLISH LITERATURE (includes the literature produced in the United States). Designed to cover the whole period in historical outline, and to prepare for a more minute study of special periods. Lectures, recitations, and assigned readings. CRAIG, BEACH, NORTHROP.
3. OLD ENGLISH. The language with reading of representative selections of Old English prose and poetry. The relation to modern English particularly emphasized. KLAEBER, FIRKINS.
4. ADVANCED OLD ENGLISH. A continuation of the preceding course. KLAEBER.
- 5a. CHAUCER. The grammar and literary forms of fourteenth-century English, with selected readings from Chaucer's works. Special attention to the Canterbury Tales. Open to students who have taken or are taking Course 1-2. FIRKINS, BEACH.
- 5b. CHAUCER. Same as Course 5a. BEACH.
6. SPENSER. The forms and literary influences in the Elizabethan period illustrated in the poetry of Edmund Spenser, with very brief readings from the minor poems, extended study of the *Faerie Queene* (more than three books), with talks illustrative of sixteenth-century history, life, and letters. Open to students who have taken or are taking Course 1-2. FIRKINS.
8. HISTORY OF THE ENGLISH LANGUAGE. Outlines of the history of the language. Lectures and assigned readings. KLAEBER.
55. SHAKESPEARE. An introductory study of Shakespeare's development as a poet and dramatist, with reading of representative plays. CRAIG, NORTHROP.
56. THE LATER PLAYS OF SHAKESPEARE. Intensive classroom analysis of four plays. Comprehensive collateral reading of other plays. NORTHROP.
57. ELIZABETHAN LITERATURE. A study of Elizabethan authors exclusive of Shakespeare. STOLL.
- 59-60. THE MODERN DRAMA. Contemporary drama from 1870 to the present; the new impulse in dramatic literature under the stimulus of latter-day thought. STOLL.
62. MILTON. The principal poets of the time of Charles I and the Protectorate with special emphasis upon Milton. NORTHROP.
63. OUTLINE OF NINETEENTH-CENTURY LITERATURE. The main features of Victorian literature, with particular emphasis upon the poetry of Arnold and the prose of Carlyle. Not offered in 1914-15. NORTHROP.

66. BROWNING AND TENNYSON. A reading of the representative work of the two major poets of the Victorian era, in order to show their quality and contrasted power. STOLL.
68. THE ENGLISH NOVEL. Principles and personalities in the evolution of the English novel. Written reports on selected novels. CRAIG.
70. MORAL FORCES IN ENGLISH LITERATURE. The moral forces in modern English literature, as seen in individual authors and in literary movements and tendencies, especially in the eighteenth and nineteenth centuries. Not offered in 1914-15. BEACH.
72. THE ENGLISH AND SCOTTISH POPULAR BALLADS. The study of a large number of traditional ballads, English and foreign, and the study of ballad style and origins. STOLL.
101. INTRODUCTION TO MIDDLE ENGLISH. An outline of Middle English grammar, including the interpretation of selected texts. Alternates with Course 103. KLAEBER.
103. PIERS THE PLOWMAN. A critical study of *Piers the Plowman*. Alternates with Course 101. Not offered in 1914-15. KLAEBER.
105. EIGHTEENTH-CENTURY LITERATURE: The Rise of Naturalism and Romanticism. Eighteenth-century English literature from Pope to Burns, with special reference to the rise and growth of naturalism and romanticism. CRAIG.
108. THE ROMANTIC MOVEMENT. The Romantic School of poets from Wordsworth to Keats and the influence of the revolution in France. CRAIG.
- 109-110. ENGLISH HUMORISTS. The manifestations of the comic spirit in modern literature, chiefly in England; humor, wit, comedy, and satire, with special reference to their use in a criticism of life and with extended illustrations from the dramatists, novelists, essayists, and poets. Not offered in 1914-15. BEACH.
- 111-112. SEVENTEENTH-CENTURY PROSE. First semester: general survey of the prose of the century to 1660. Second semester: literature of the Restoration, with particular study of Dryden. Course 3-4 in History is a desirable prerequisite. Not offered in 1914-15. NORTHROP.
- 113-114. THE DRAMA: STRUCTURE AND EVOLUTION. First semester: theory of the drama and history up to the nineteenth century. Second semester: recent drama, continental, English. Open only to those who have completed the first semester. FIRKINS.
115. ENGLISH IDIOM. A discussion of current idiom with the purpose of relating it to the underlying principles of historic development. Not offered in 1914-15. BURTON.

118. **THE BIBLE AS LITERATURE.** A literary study of the Old Testament with special attention to forms and the critical study of selected readings. Not offered in 1914-15. BURTON.
- 119-120. **PRINCIPLES OF LITERARY CRITICISM.** A brief treatment of elements or forces in literature, e.g., clearness, vigor, beauty, precision, art, taste, humor, ethics, truth, and the like; an exposition of literary types, e.g., the lyric, epic, drama, short story, novel, etc., in relation to the standards and methods of judging each. Before registering, consult instructor. FIRKINS.
121. **AMERICAN LITERATURE.** Lectures on American literature, with extensive readings from the principal poets and prose writers of this country. Not offered in 1914-15. CRAIG.
- 123-124. **SEMINAR IN GEORGE MEREDITH.** Meredith's personality, literary method, and philosophy of life, as seen chiefly in his novels and poems. Open upon approval of the instructor to seniors and graduate students who have completed twelve credits in the department. BEACH.
125. **BIOGRAPHY.** A study of important English biographies, with attention to notable journals, memoirs, and letters. Open to graduate students who have completed an undergraduate major in English, and, upon approval of the instructor, to seniors who have twelve credits in the department. NORTHROP.
127. **SEVENTEENTH-CENTURY DRAMA.** The drama from the Restoration to the rise of sentimental comedy. STOLL.

GEOLOGY AND MINERALOGY

Professor WILLIAM H. EMMONS; Assistant Professors FRANK F. GROUT, CHESSELY J. POSEY; Instructors A. WOLFRED JOHNSTON, EDGAR K. SOPER; in the Extension Division, Assistant Professor EDWARD M. LEHNERTS.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits with reinforcing subjects selected from Animal Biology, Botany, Chemistry, Mathematics, Physics, Topographic Drawing, advanced modern languages, and additional Geology, Mineralogy, and Geography.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	General Geology.....	3	Soph., jr., sr.	None
3.	Laboratory Work.....	1	Soph., jr., sr.	Supports 1
4.	Geology of Minnesota.....	3	Soph., jr., sr.	1
6.	Historical Geology.....	3	Soph., jr., sr.	1
8.	Hist. Geol. Laboratory.....	1	Soph., jr., sr.	Supports 4 and 6

No.	Title	Credits	Offere. to	Prereq. Courses
15a.	Minerals and Rocks.....	1	Jr., sr.	1
15b.	Minerals and Rocks.....	1	Jr., sr.	1
21.	Elements of Mineralogy.....	3	Soph., jr., sr.	See statement
22.	Descriptive Mineralogy.....	3	Soph., jr., sr.	21
29.	General Physiography.....	3	Jr., sr.	None
31-32.	Phys. and Human Geography....	6*	Soph., jr.	None
34.	Meteorology.....	3	Jr., sr.	1 or 29
36.	Geography of North America....	3	Jr., sr.	1 or 29
61.	Physical Mineralogy.....	3	Jr., sr.	22
71.	Applied Geology.....	3	Jr., sr.	1, 21, 22
116.	Geography of Latin America.....	3	Sr., grad.	1, 29, or 31-32 and 3 credits in Geography
118.	Geography of Eurasia.....	3	Sr., grad.	Same as for 116
160.	Field Geology.....	6	Jr., sr., grad.	See statement
188.	Field Work in Geography.....	6	Jr., sr., grad.	1 or 29

*Both semesters must be completed before credit is given for the first semester.

1. GENERAL GEOLOGY. A synoptical treatment of the earth and geologic processes. Physiographic, dynamic, and structural geology, with a brief introduction to historical geology. Lectures, laboratory work, field excursions, map study, and conferences. EMMONS, JOHNSTON, BRODERICK.
3. LABORATORY WORK. Supplements Course 1 with study of rocks and ores, topographic and geologic maps, and reference reading. JOHNSTON, BRODERICK, and Assistants.
4. GEOLOGY OF MINNESOTA. The physical geography and geological history of Minnesota. The relations of industrial development to geological features. The principles of pre-Cambrian geology as exemplified in Minnesota. JOHNSTON.
6. HISTORICAL GEOLOGY. The geological history of the North American continent; the more important types of fossils and their relations. EMMONS, SOPER.
8. HISTORICAL GEOLOGY LABORATORY WORK. The interpretation of geologic maps and sections; structural relations; study of fossils and rock specimens. JOHNSTON.
- 15a. MINERALS AND ROCKS. An outline study of general principles of petrography; classification of minerals and rocks and practice in their identification. Reference reading and field work. GROUT.
- 15b. MINERALS AND ROCKS. Same as Course 15a.
21. ELEMENTS OF MINERALOGY. The crystal systems; morphological, physical, and chemical character of minerals; occurrence, genesis, and uses of minerals; classification and description of common minerals. Determinative work in laboratory, blowpipe analysis, sight identification. Open to students who have had or who are taking Chemistry. GROUT.

22. **DESCRIPTIVE MINERALOGY.** A continuation of Course 21, special attention being given to metalliferous and rock-forming minerals. Laboratory determinations and sight identification. The use of the goniometer and microscope. Laboratory work, reference reading, and field excursions.
29. **GENERAL PHYSIOGRAPHY.** Principles of earth sculpture; physiographic changes in progress, and agencies causing them; hydrography and oceanography; planetary relations; climatology; laboratory conferences on interpretation of topographic maps; field excursions. POSEY.
- 31-32. **PHYSICAL AND HUMAN GEOGRAPHY.** First semester: physical features of the earth and agencies effecting changes in them; effects of various land forms on activities of man; elements of climatology and oceanography; topographic map interpretation; field excursions. POSEY.
- Second semester: economic and political development in relation to nature; the geographic and economic interpretations of history; economic progress as a phase of adaptation to environment. Text-book, lectures, and reports on special topics. HAYES.
- Constitutes a unit course for which no credit is given until both semesters are completed. May be counted toward a major or a minor in the Department of Geology and Mineralogy or in the Department of Economics. Not open to those who have had Course 29.
34. **METEOROLOGY.** The properties and phenomena of the atmosphere, including composition, temperature, pressure, and circulation; the work of the Weather Bureau; the major climatic divisions of the earth and their climates. POSEY.
36. **GEOGRAPHY OF NORTH AMERICA.** The regional geography of the United States and Canada; their physiography, climate, natural resources, and people. The utilization and conservation of natural resources is emphasized. POSEY.
61. **PHYSICAL MINERALOGY.** The form, optical and physical properties of minerals; expansion and conductivity; pyroelectricity; hardness, percussion and etch figures; cleavage and gliding planes, etc. Offered if enough students apply. GROUT.
71. **APPLIED GEOLOGY.** The occurrence, genesis, distribution, and uses of metallic and non-metallic minerals and mineral fuels of economic value. Lectures and laboratory work. SOPER.
116. **GEOGRAPHY OF LATIN AMERICA.** The regional geography of the Latin-American countries; their geology, topography, climate, natural resources, people, industries, and trade. The trade relations between Latin-American countries and the United States is given special attention. Given in alternate years with Course 118. Not given in 1914-15. POSEY.

118. **GEOGRAPHY OF EURASIA.** The regional geography of Eurasia; the geology, topography, climate, and natural resources, people, industries, and trade of these countries. Attention will be given to the attitude of the major European countries to the "new" lands of Asia. Given in alternate years with Course 116. POSEY.
160. **FIELD GEOLOGY.** Six weeks in the field in the summer vacation period. Fields for 1914 are the Mesabi and Vermilion Ranges. Credit given only on completion of a satisfactory report. JOHNSTON.
188. **FIELD WORK IN GEOGRAPHY.** A six weeks' course given during the summer months. Systematic study in the field of the physical and industrial geography of selected areas in one or more western states. Arrangements may be ascertained upon application to the department. LEHNERTS.

GERMAN

Professor CARL SCHLENKER; Assistant Professors OSCAR C. BURKHARD, WALTER R. MYERS; Instructors JAMES DAVIES, J. THEODORE GEISSEN-DOERFER, ALFRED E. KOENIG, THEOPHILUS H. SCHROEDEL, RICHARD WISCHKAEMPER.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, Course 3-4 or 5-6, Course 7-8 or 23-24, and Courses 29-30, 53-54, 101-102, 60 are required.

Students may select additional work, on the approval of the Committee, from other courses announced in German.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
29-30. Advanced Conversation.....		4*	Soph., jr., sr.	See statement
53-54. Classic Period.....		6	Soph., jr., sr.	7-8 or 23-24
60. Teachers' Course.....		1	Jr., sr.	53-54
101-102. Modern Authors.....		6	Jr., sr., grad.	53-54
107-108. Middle High German.....		4*	Sr., grad.	53-54
109-110. History of German Language.....		4*	Sr., grad.	53-54
113-114. Age of Frederick the Great.....		4*	Sr., grad.	53-54
115-116. Faust, Part II.....		4*	Sr., grad.	53-54
117-118. Goethe.....		4*	Sr., grad.	53-54
119-120. Drama of Schiller.....		4*	Sr., grad.	53-54
127-128. Lyric Poetry.....		4*	Sr., grad.	53-54
129-130. German Novel.....		4*	Sr., grad.	53-54

*Both semesters must be completed before credit is given for either semester.

29-30. **ADVANCED CONVERSATION AND COMPOSITION.** Essays on assigned subjects; oral exercises in German by means of discussions on everyday subjects; debates, narration, and the like. Open only to students who are taking or have taken Course 7-8, 23-24, or 53-54; recommended that it be preceded by Course 27-28; required of those who desire a

teacher's recommendation in German; intended as a preparation for Course 60. SCHLENKER, BURKHARD, MYERS, GEISSENDOERFER, KOENIG, SCHROEDEL, WISCHKAEMPER.

- 53-54. GERMAN LITERATURE OF THE CLASSIC PERIOD. First semester: Goethe's *Faust*: its genesis; the *Faust* legend; its treatment in literature before and since Goethe's time; plan of Goethe's *Faust*; solution of the *Faust* problem in Part II. Second semester: Schiller's ballads and other representative poems of this period; German versification; reading and discussion of Lessing's more important critiques, the *Laocoon* and *Dramaturgie*; history of German literature of the classic period. Lectures and collateral readings; essays by the class. Required of those who desire a teacher's recommendation in German. BURKHARD, MYERS.
60. TEACHERS' COURSE. Especially designed for students who expect to become teachers of German in high schools. SCHLENKER.
- 101-102. MODERN AUTHORS. First semester: Romantic school and *Junge Deutschland*. Second semester: German literature since 1848. Required of those who desire a teacher's recommendation. SCHLENKER.
- 107-108. MIDDLE HIGH GERMAN. The language and literature of the period. Paul's *Mittelhochdeutsche Grammatik*; selected readings from *Armer Heinrich*, *Nibelungen Lied*, *Gudrun*, the poems of Walter von der Vogelweide, *Parsival*, etc. Course conducted in German. SCHLENKER, SCHROEDEL.
- 109-110. HISTORY OF THE GERMAN LANGUAGE. Its development, with special reference to modern German. Based on Behaghel's *Deutsche Sprache*. Etymology, word formation, syntax, comparison of English and German, etc. Arranged to meet the needs of teachers. Not offered in 1914-15. BURKHARD.
- 113-114. AGE OF FREDERICK THE GREAT. I. The literature from the Thirty Years' War to the Age of Frederick. II. The so-called Age of Enlightenment. (Klopstock, Wieland, Lessing, and Herder.) Recitations, readings and reports, lectures. Course conducted in German. Not offered in 1914-15. SCHLENKER.
- 115-116. FAUST, PART II. Recitations, collateral reading in *Faust* literature, and reports, lectures and discussions. Not offered in 1914-15.
- 117-118. GOETHE, THE MAN AND HIS WORK. Course conducted in German. WISCHKAEMPER.
- 119-120. THE DRAMA OF SCHILLER. I. Schiller's drama as a reflection of the thoughts of his age. II. The plays considered in chronological order, with reference to the development of the dramatic idea, from the expression of the Storm and Stress movement in the early drama to the classic form. BURKHARD.

127-128. LYRIC POETRY OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES. Courses conducted in German. Special attention given to literary schools and movements. Not offered in 1914-15. DAVIES.

129-130. THE DEVELOPMENT OF THE GERMAN NOVEL. The social forces and the foreign influences manifesting themselves in the German novel. Course conducted in German. GEISSENDOERFER.

GREEK

Professors JOHN CORRIN HUTCHINSON, CHARLES ALBERT SAVAGE.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits (exclusive of Courses 59 and 64), together with reinforcing subjects selected from Latin, advanced German and French, Philology, English, advanced Rhetoric, Philosophy, Ancient History, and additional Greek.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
7.	Dramatic Poetry.....	3	Soph., jr., sr.	3-4 or 5-6
51.	Philosophy.....	3	Jr., sr.	3-4, or 5-6 and 7
52.	Oratory.....	3	Jr., sr.	3-4, or 5-6 and 7
53-54.	Composition.....	2	Sr.	51 and 52
101.	Lyric Poetry.....	3	Sr., grad.	51 or 52
102.	Tragedy.....	3	Sr., grad.	7 or 101
103.	Septuagint.....	3	Sr., grad.	51
104.	The New Testament.....	3	Sr., grad.	51

Courses Open to All, No Knowledge of Greek Being Required

59-60.	Greek Archaeology.....	1 or 2	Jr., sr.	None
62.	Greek Literature and Life.....	2	Jr., sr.	None
63-64.	Greek Mythology.....	1 or 2	Jr., sr.	None

7. DRAMATIC POETRY. Euripides' *Alcestis*. Special attention given to meter, literary style, and mythology. SAVAGE.

51. PHILOSOPHY. Plato's *Apology*, and selections from other writings of Plato. HUTCHINSON.

52. ORATORY. Selections from Lysias, Demosthenes, and Isocrates. Lectures on Greek oratory. SAVAGE.

53-54. COMPOSITION. An advanced course in syntax and style, for those who expect to teach Greek. HUTCHINSON.

101. LYRIC POETRY. Selections from the elegiac, iambic, lyric, and bucolic poets. HUTCHINSON.

102. TRAGEDY. Aeschylus or Sophocles. Special attention given to the development of the drama, and to the literary form and dramatic representation of the plays read. SAVAGE.

103. THE SEPTUAGINT. Especially intended for those who are preparing for the ministry or for some other form of religious work. Not offered in 1914-15. HUTCHINSON.
104. THE NEW TESTAMENT. Especially intended for those who are preparing for the ministry or for some other form of religious work. HUTCHINSON.
- 59-60. GREEK ARCHAEOLOGY. A study of the Greek spirit as manifested in architecture and sculpture. First semester, architecture; second, sculpture. HUTCHINSON.
62. GREEK LITERATURE AND LIFE. Lectures, textbook, and illustrated readings; special lectures, illustrated by stereopticon views. Recommended to those intending to teach Greek, Latin, English, or Ancient History. SAVAGE.
- 63-64. GREEK MYTHOLOGY. Lectures, textbook, and assigned readings, supplemented by occasional stereopticon illustrations. Recommended to those specializing in languages or philosophy. SAVAGE.

HISTORY

Professors GUY STANTON FORD, WILLIAM STEARNS DAVIS, ALBERT BEEBE WHITE; Associate Professor WALLACE NOTESTEIN; Assistant Professor SOLON J. BUCK; Instructor AUGUST CHARLES KREY.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, twenty-four credits, including Course 16 and at least six credits in intensive courses, are required. At least the elements of the other social sciences are recommended.

Students may select additional work, on the approval of the Committee, from other courses announced in History.

Students who expect to teach history are advised to consult in respect to their courses with the head of the department during the freshman year.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Medieval and Mod. Hist.....	6	All	None
3-4.	English History to 1783.....	6	All	2 yrs. prep. History (Am. Gov't may be inc.)
5-6.	American History.....	6	Soph., jr., sr.	6 credits
7.	English History, 1783-1914.....	3	Soph., jr., sr.	6 credits
10.	Nineteenth-Century Europe.....	3	Soph., jr., sr.	6 credits
13.	Medieval Civilization.....	3	Soph., jr., sr.	6 credits
14.	Renaissance and Reformation....	3	Soph., jr., sr.	6 credits

No.	Title	Credits	Offered to	Prereq. Courses
16.	Teachers' Course.....	3	Sr.	21 credits inc. courses in progress.
21.	Selected Topics in Greek History.	3	Jr., sr.	9 credits
23.	Selected Topics in Roman History	3	Jr., sr.	9 credits
101.	Revolutionary and Napoleonic Era	3	Jr., sr., grad.	9 credits
104.	The Far East.....	3	Jr., sr., grad.	9 credits inc. 1-2 or 3-4
116.	American History, 1865-1914.....	3	Soph., jr., sr.	9 credits
121-122.	History of Greece.....	6	Jr., sr., grad.	See statement
123-124.	History of Rome.....	6	Jr., sr., grad.	See statement
126.	History of Old Orient.....	3	Jr., sr., grad.	9 credits
133-134.	Ancient Civilization.....	6	Jr., sr., grad.	See statement
151.	The West in American History...	3	Jr., sr., grad.	12 credits
153.	Historical Masterpieces.....	3	Jr., sr., grad.	12 credits
156.	American Diplomacy.....	3	Jr., sr., grad.	12 credits
161.	English Parliament.....	3	Jr., sr., grad.	See statement
163.	English Judiciary.....	3	Jr., sr., grad.	See statement
171-172.	Germany since 1640.....	6	Sr., grad.	See statement
181.	Eng. Backgrounds of Colonial History.....	3	Jr., sr., grad.	9 credits inc. 3-4 or 5-6
182.	Eng. Colonization in America.....	3	Jr., sr., grad.	9 credits inc. 5-6
184.	Stuart Period.....	3	Sr., grad.	12 credits inc. 3-4

1-2. **MEDIEVAL AND MODERN HISTORY.** The growth of France, Germany, and Italy from 800 A. D. to the French Revolution, with reference also to social and economic conditions, and to the Medieval Church. Designed as a background for later work in the history, literature, and politics of continental Europe. FORD, KREY.

3-4. **ENGLISH HISTORY TO 1783.** The general political history of England from the earliest times to the close of the American Revolution, with special reference to the development of governmental institutions. Serves as an introduction to further work in English history, literature, and politics. WHITE, NOTESTEIN.

GENERAL COURSES

5-6. **AMERICAN HISTORY.** A general survey of American history to the present time. Chief emphasis upon the National period. If possible, Political Science 1 should accompany or follow this course. BUCK.

7. **ENGLISH HISTORY, 1783-1914.** Textbooks, assigned readings, and lectures. Emphasis will be placed upon the industrial revolution, franchise reforms, relations with the United States, and very recent history. NOTESTEIN.

10. **EUROPE IN THE NINETEENTH CENTURY.** The national movements of the nineteenth century and those European conditions which form the basis of modern world politics. FORD.

13. **MEDIEVAL CIVILIZATION.** A study of social and intellectual develop-

ment of Europe from the period of the German migration to the end of the thirteenth century. KREY.

14. THE RENAISSANCE AND REFORMATION. The Renaissance and Reformation as general European movements with especial emphasis upon the work of individual men and upon ideas rather than upon politics and institutions; how the medieval world became the modern world. Not given in 1914-15. WHITE.
16. THE TEACHING OF HISTORY. Deals chiefly with the practical problems of teaching history in the secondary schools. KREY *et al.*
21. SELECTED TOPICS IN GREEK HISTORY. Open to juniors and seniors eligible for Course 121-122, but desiring a shorter course. Alternates with Course 121-122. DAVIS.
23. SELECTED TOPICS IN ROMAN HISTORY. Open to students eligible for Course 123-124, but desiring a shorter course. To alternate with Course 123-124. Not given in 1914-15. DAVIS.
101. THE FRENCH REVOLUTION AND THE NAPOLEONIC PERIOD. French conditions in the eighteenth century before 1774; the events between 1774 and 1789 which precipitated the revolution in France; the reform work of the early revolution; the Napoleonic régime in France and Europe. A reading knowledge of French is desirable. FORD.
104. THE FAR EAST. The history of India, China, and Japan with special reference to their relations to European nations, and to the events of the past century. Alternates with Course 126. Not offered in 1914-15. DAVIS.
116. AMERICAN HISTORY, 1865-1914. Special attention given to the reconstruction period and to the history of the presidential elections. BUCK.
- 121-122. HISTORY OF GREECE. The political and social development of the Greek states to the time of their incorporation into the Roman Empire, with special attention to the permanent influence of Greek civilization. Prerequisites: nine credits in History or six credits and a major in Greek, and no previous course in Greek history. Alternates with Course 21. Not given in 1914-15. DAVIS.
- 123-124. HISTORY OF ROME. Social and political development with considerable attention to cultural subjects. Prerequisites: nine credits in History or six credits and a major in Latin. Alternates with Course 23. DAVIS.
126. HISTORY OF THE OLD ORIENT. The origins of the Egyptians, Babylonians, Assyrians, and Persians, and the main features of their political history and civilizations. The history of the Hebrews discussed so far as it bears upon general Oriental problems. Alternates with Course 104. DAVIS.

- 133-134. ANCIENT CIVILIZATION. First semester, Greece; second semester, Rome. Social and intellectual life of antiquity with special reference to those factors which have persisted to the present day. A working knowledge of the political history assumed. Prerequisites: twelve credits in History, or a major in Greek or Latin and six credits in History. DAVIS.

ADVANCED OR INTENSIVE COURSES

151. THE WEST IN AMERICAN HISTORY. The westward movement of population and civilization; its political, economic, and social aspects; and the results upon national development. BUCK.
153. A CRITICAL STUDY OF AN HISTORICAL MASTERPIECE. To develop the habit of reading history critically. Each year a masterpiece of historical writing minutely and critically studied. Not offered in 1914-15. In 1915-16 Rhodes' *History of the United States from the Compromise of 1850* will be read.
156. THE HISTORY OF AMERICAN DIPLOMACY. A research course dealing principally with the more important features of American foreign policy during the early years of the Federal Government. Not offered in 1914-15.
161. THE BEGINNINGS OF PARLIAMENT. Parliamentary beginnings from the middle of the twelfth to the middle of the fourteenth century; based wholly upon original sources. The origins of representation and popular election; the genesis of England's present two-house assembly; its procedure and powers. Prerequisites: twelve credits in History, including Course 3-4, and the permission of the instructor; a knowledge of at least high-school Latin. Alternates with Course 163. WHITE.
163. ORIGIN OF THE ENGLISH JUDICIAL SYSTEM. The origin and early development of the most distinctive features in England's present-day course and procedure. Prerequisites: twelve credits in History, including Course 3-4, and the permission of the instructor; a knowledge of at least high-school Latin. Alternates with Course 161. Not offered in 1914-15. WHITE.
- 171-172. GERMAN HISTORY. A general survey with special reference to the rise of Brandenburg-Prussia since 1640. Prerequisites: the permission of the instructor; twelve credits in History, or History 1-2 and a major in German. FORD.
181. ENGLISH BACKGROUNDS OF AMERICAN COLONIAL HISTORY. Alternates with Course 7. Not offered in 1914-15. NOTESTEIN.
182. ENGLISH COLONIZATION IN AMERICA. Alternates with Course 184. Not offered in 1914-15. NOTESTEIN.

184. STUART PERIOD. English 111-112 is strongly recommended as a desirable reinforcing subject. Alternates with Course 182. NOTESTEIN.

HOME ECONOMICS

Professor JOSEPHINE T. BERRY; Assistant Professors LOUISE MCDANELL, MARION WELLER; Instructors BESSIE BEMIS, GRACE PATTON GILLET, HARRIET GOLDSTEIN, MABEL BARBARA TRILLING, GRACE I. WILLIAMS; Lecturer MARTHA B. MOORHEAD; Laboratory Assistant DOROTHY MOTL.

General statement: All courses in the department of Home Economics are planned primarily for students majoring in Home Economics. They are open, however, as electives to students in other colleges, who offer the prerequisite courses. Courses desirable as electives for students in Education, as a part of their general preparation for public school teaching are described below.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1a.	Textiles.....	3	Fr.	None
1b.	Textiles.....	3	Fr.	None
11a.	Garment Making.....	3	Fr.	None
11b.	Garment Making.....	3	Fr.	None
13a.	Dressmaking.....	3	Jr.	1, 11
13b.	Dressmaking.....	3	Jr.	1, 11
15a.	Decorative Needlework.....	3	Jr.	1, 11, 51; Parallel 13
15b.	Decorative Needlework.....	3	Jr.	1, 11, 51; Parallel 13
21a.	Foods and Cookery.....	3	Soph.	Chem. 2; Parallel Physiol. 53
21b.	Foods and Cookery.....	3	Soph.	Chem. 2; Parallel Physiol. 53
22a.	Food Economics.....	3	Soph.	21
22b.	Food Economics.....	3	Soph.	21
51a.	Drawing and Design.....	3	Fr.	None
51b.	Drawing and Design.....	3	Fr.	None

1a. TEXTILES. A study of the textile fibers and fabrics as to structure and properties, with application to the art and economic considerations involved in selection and purchase of clothing and household furnishing. WELLER, TRILLING.

1b. TEXTILES. Same as Course 1a.

11a. GARMENT MAKING. Instruction and laboratory practice in hand-sewing; in the reading and adaptation of commercial patterns; in the construction and use of the sewing machine; in designing, cutting, and making simple outer garments from washable materials. GILLET.

11b. GARMENT MAKING. Same as Course 11a.

- 13a. DRESSMAKING. Careful consideration of the factors of quality, suitability, cost in the selection of the dress fabrics employed; analysis and adaptation of simple dress designs; instruction and practice in cutting, fitting, draping, and methods of construction involved in tailored dresses. WELLER, TRILLING.
- 13b. DRESSMAKING. Same as Course 13a.
- 15a. DECORATIVE NEEDLEWORK. Applied design in embroidery, lace, trimmings, as employed in clothing and house-furnishing.
- 15b. DECORATIVE NEEDLEWORK. Same as Course 15a.
- 21a. FOODS AND COOKERY. (a) Production, manufacture, chemical composition of typical foods; their classification into food principles; changes in digestion; function in nutrition. (b) Fundamental science principles from chemistry, physics, biology, bacteriology, and their application in typical cookery processes. MCDANELL, BEMIS.
- 21b. FOODS AND COOKERY. Same as Course 21a.
- 22a. FOOD ECONOMICS. Cost and nutritive value of typical foods; the study of dietaries; preparation and serving of meals, the cost bearing a definite relation to the family budget. MCDANELL, BEMIS.
- 22b. FOOD ECONOMICS. Same as Course 22a.
- 51a. DRAWING AND DESIGN. Composition, perspective, color theory, and color harmonies applied to costume design and interiors; harmony, balance, rhythm, in line and area design. GOLDSTEIN.
- 51b. DRAWING AND DESIGN. Same as Course 51a.

LATIN

Professors JOSEPH B. PIKE, JOHN E. GRANRUD, CHARLES A. SAVAGE.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, including Courses 5, 6, 57, and 58.

For a Major, eighteen to twenty-four credits, including Courses 5, 6, 57, 58, 101, and 102. Students may select additional work, on the approval of the Committee, from other courses announced in Latin.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
101.	Advanced Course in Caesar	3	Jr., sr.	5-58
102.	Advanced Course in Virgil	3	Jr., sr.	5-58
104.	Latin Writing	2	Jr., sr.	5-58
105.	Roman Elegiac Poetry	3	Jr., sr.	5-58
107.	Correspondence of Cicero	3	Jr., sr.	5-58
108.	Roman Drama	3	Jr., sr.	5-58
110.	Roman Satire	3	Jr., sr.	5-58
9.	Roman Architecture and Life	1	Jr., sr.	None
10.	Roman Art	1	Jr., sr.	None

101. ADVANCED COURSE IN CAESAR. Selections from books five to seven of the Gallic War and from the Civil War; the principles of indirect discourse; intermediate Latin composition; class drill work and discussion of various problems connected with secondary school work in Latin. Required for a teacher's recommendation in Latin. PIKE.
102. ADVANCED COURSE IN VIRGIL. An interpretation of selections from books seven to twelve of the *Aeneid*; the quantitative method of pronouncing Latin verse; the metrical rendering of selected passages. Required for a teacher's recommendation in Latin. PIKE.
104. LATIN WRITING. Advanced Latin writing and Latin prose style. Required for a degree with distinction in Latin. PIKE.
105. ROMAN ELEGIAC POETRY. Selections from Catullus, Tibullus, Propertius, and Ovid, the rise, development, and characteristics of Roman elegiac poetry. Alternates with Course 107. Not offered in 1914-15. GRANRUD.
107. CORRESPONDENCE OF CICERO. Selections from the letters of Cicero; study of his life and the history of his times. GRANRUD.
108. ROMAN DRAMA. Selections from Seneca's tragedies and from the comedies of Plautus and Terence; the rise and development of the drama at Rome. Alternates with Course 110. GRANRUD.
110. ROMAN SATIRE. Selections from Horace, Persius, and Juvenal, with a study of the rise, development, and characteristics of Roman satire. Not offered in 1914-15. GRANRUD.
9. ROMAN ARCHITECTURE AND LIFE. Rome and the Campagna, the forum, temples, theatres, amphitheatres, circuses, thermae, arches, and tombs. Lectures illustrated by slides. Not credited toward a major or minor, but as a reinforcing subject. No knowledge of Latin required. GRANRUD.
10. ROMAN ART. Roman and Pompeian sculpture, wall decoration, painting, and minor arts; characteristics of Roman art. Not credited toward a major or minor, but as a reinforcing subject. No knowledge of Latin required. GRANRUD.

MANUAL TRAINING

Professor JOHN H. FLATHER*; Assistant Professor, S. CARL SHIPLEY; Instructors PETER PETERSON, EDWARD P. QUIGLEY, WILLIAM H. RICHARDS.

REQUIREMENTS OF THE DEPARTMENT

Courses offered by the department are arranged in progressive order and it is essential that subjects be taken in proper sequence. Course may be elected only by those having sufficient preparation.

*Absent on leave 1914-15.

Each credit hour calls in all Manual Training courses for at least two hours of shop work. Students may register for credit in Manual Training courses only with the approval of the Committee.

COURSES

No.	Title	Credits	Offered to
	1. Introductory Course in Woodwork.	3	Jr., sr.
	3a. Blacksmithing.....	3	Jr., sr.
	3b. Blacksmithing.....	3	Jr., sr.
	4a. Foundry Practice.....	3	Jr., sr.
	4b. Foundry Practice.....	3	Jr., sr.
	5a. Introd. Course in Machine Work..	3	Jr., sr.
	5b. Introd. Course in Machine Work..	3	Jr., sr.
	6a. Adv. Course in Machine Work....	3	Jr., sr.
	6b. Adv. Course in Machine Work....	3	Jr., sr.
	9a. Adv. Course in Woodwork.....	3	Jr., sr.
	9b. Adv. Course in Woodwork.....	3	Jr., sr.

1. INTRODUCTORY COURSE IN WOODWORK. Designed to give the elementary principles of sloyd and to develop familiarity with tools and materials. RICHARDS.
- 3a. BLACKSMITHING. Use of tools, forging, welding, tool dressing, tempering. Lectures and practice. QUIGLEY.
- 3b. BLACKSMITHING. Same as Course 3a.
- 4a. FOUNDRY PRACTICE. Molding, casting, mixing metals, brass work, and core making. Shop practice, recitations, and lectures. PETERSON.
- 4b. FOUNDRY PRACTICE. Same as Course 4a.
- 5a. INTRODUCTORY COURSE IN MACHINE WORK. Chipping, filing, machine work. Lectures and practice. SHIPLEY.
- 5b. INTRODUCTORY COURSE IN MACHINE WORK. Same as Course 5a.
- 6a. ADVANCED COURSE IN MACHINE WORK. Gear cutting, finishing, machine construction. Lectures and practice. SHIPLEY.
- 6b. ADVANCED COURSE IN MACHINE WORK. Same as Course 6a.
- 9a. ADVANCED COURSE IN WOODWORK. A course in woodworking, joinery, and wood-carving, designed with special reference to the needs of teachers of manual training. RICHARDS.
- 9b. ADVANCED COURSE IN WOODWORK. Same as Course 9a.

MATHEMATICS

Professor GEORGE N. BAUER; Associate Professor WILLIAM H. BUSSEY; Assistant Professors ROYAL R. SHUMWAY, A. L. UNDERHILL; Instructors LINCOLN K. ADKINS, WALTER E. ANDERSON, JAMES S. MIKESH*, HERMON L. SLOBIN.

*Absent on leave 1914-15.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, including Courses 1, 2, 7, 11, or 3, 4, 7, 11, or 2, 9, 11, 51.

For a Major, eighteen to twenty-four credits, including Course 51.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Higher Alg. Part I.....	5†	Fr., soph.	El. Alg.
2a.	Alg. (cont.) and Pl. Trig.....	5	Fr., soph.	1 or prep. Higher Algebra
2b.	Alg. (cont.) and Pl. Trig.....	5	Fr., soph.	1 or prep. Higher Algebra
3.	Higher Alg. Part II.....	3‡	Fr., soph.	Prep. Higher Algebra
4.	Trigonometry.....	3	Fr., soph.	3
7.	Plane Analytical Geometry.....	3	Soph., jr., sr.	2 or 4
9a.	Pl. & Solid Analyt. Geometry....	5	Fr., soph., jr., sr.	2 or 4
9b.	Pl. & Solid Analyt. Geometry....	5	Fr., soph., jr., sr.	2 or 4
11a.	Differential Calculus.....	3	Soph., jr., sr.	7 or 9
11b.	Differential Calculus.....	3	Soph., jr., sr.	7 or 9
51a.	Integral Calculus.....	3	Jr., sr.	11
51b.	Integral Calculus.....	3	Jr., sr.	11
54.	Teachers' Course.....	1	Jr., sr.	11
101.	Solid Anal. Geometry.....	3	Jr., sr., grad.	11
102.	Adv. Plane Anal. Geometry.....	3	Jr., sr., grad.	11
104.	Modern Synthetic Geometry.....	3	Jr., sr., grad.	11
106.	Differential Equations.....	3	Jr., sr., grad.	51
119a.	Modern Higher Algebra.....	3	Sr., grad.	51
119b.	Modern Higher Algebra.....	3	Sr., grad.	51
125-126.	Differential Geometry.....	6	Sr., grad.	51
127a.	Infinite Series.....	3	Sr., grad.	17 credits besides Alg. and Trig.
127b.	Infinite Series.....	3	Sr., grad.	See 127a
140.	Method of Least Squares.....	2	Sr., grad.	51
143-144.	Advanced Calculus.....	6	Sr., grad.	51

†Must be followed by Course 2.

‡Must be followed by Course 4.

Freshmen who have an entrance credit in First Part Higher Algebra and who intend to specialize in Mathematics should take Course 2a the first semester and Course 9b the second semester rather than Courses 3 and 4.

1. HIGHER ALGEBRA, PART I. The examples and problems are more difficult than those under the same subjects in Elementary Algebra and demonstrations are an important part of the work. UNDERHILL, SHUMWAY, SLOBIN, ADKINS, ANDERSON.
- 2a. ALGEBRA CONTINUED AND PLANE TRIGONOMETRY. A continuation of Course 1 and consists of Algebra through logarithms, and Plain Trigonometry. UNDERHILL, SHUMWAY, SLOBIN, ADKINS, ANDERSON.
- 2b. ALGEBRA CONTINUED AND PLANE TRIGONOMETRY. Same as Course 2a.

3. HIGHER ALGEBRA, PART II. Variation, quadratic equations reviewed, irrational equations, special higher equations, simultaneous quadratic equations, differentiation of algebraic functions, development of functions (by the method of indeterminate coefficients, Taylor's formula, and the binomial theorem), theory of equations and solution of numerical higher equations, permutations, combinations. BAUER, BUSSEY, UNDERHILL, SHUMWAY, SLOBIN, ADKINS, ANDERSON.
4. LOGARITHMS AND TRIGONOMETRY. Text, tables, and numerous problems. BAUER, BUSSEY, UNDERHILL, SHUMWAY, SLOBIN, ADKINS, ANDERSON.
7. PLANE ANALYTICAL GEOMETRY. Rectilinear and polar coördinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of coördinates, properties of the straight line, the conic sections and higher plane curves by means of their equations. Not open to those who have taken Course 9a or 9b. BAUER, BUSSEY, SHUMWAY, SLOBIN, ADKINS.
- 9a. PLANE AND SOLID ANALYTICAL GEOMETRY. A more extended course in Plane Analytical Geometry than Course 7, and an introduction to Solid Analytical Geometry. Students who intend to specialize in Mathematics should take this course rather than Course 7. Not open to those who have taken Course 7. BUSSEY, UNDERHILL, SHUMWAY, SLOBIN.
- 9b. PLANE AND SOLID ANALYTICAL GEOMETRY. Same as Course 9a.
- 11a. DIFFERENTIAL CALCULUS. Differentiation of algebraic and transcendental functions, development of functions, indeterminate forms, maxima and minima, treatment of tangents, subtangents, normals, subnormals, asymptotes, direction and rate of curvature, evolutes, envelopes and singular points. BAUER, BUSSEY, UNDERHILL, SHUMWAY, SLOBIN.
- 11b. DIFFERENTIAL CALCULUS. Same as Course 11a.
- 51a. INTEGRAL CALCULUS. Integration of the various forms, integration as summation, rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, equations of loci by means of the calculus, successive integration with applications to moment of inertia, areas and volumes. UNDERHILL.
- 51b. INTEGRAL CALCULUS. Same as Course 51a.
54. TEACHERS' COURSE. Text and assigned readings. Special attention paid to the fundamental principles of Algebra and Geometry. SHUMWAY.
101. SOLID ANALYTICAL GEOMETRY. Elementary theorems of projection, coördinates, the plane, the line in space, quadric surfaces, transforma-

tion of coördinates, tangents, poles and polars, the general equation of the second degree. Numerous examples are assigned to illustrate the theory. BUSSEY.

102. ADVANCED COURSE IN PLANE ANALYTICAL GEOMETRY. Supplementary to Courses 7 and 9, treating more fully of the subjects of those courses and taking up additional topics. Not offered in 1914-15. BUSSEY.

104. MODERN SYNTHETIC GEOMETRY. Based upon the method of central projection without the use of coördinates. BUSSEY.

106. DIFFERENTIAL EQUATIONS. Text and lectures. BAUER.

Any of the following courses for which a sufficient number of students apply will be given in 1914-15. Course 125-126 was given in 1913-14.

119a or 119b. MODERN HIGHER ALGEBRA. SHUMWAY.

125-126. DIFFERENTIAL GEOMETRY. UNDERHILL.

127a or 127b. INFINITE SERIES. BAUER.

140. METHOD OF LEAST SQUARES. The combination and adjustment of observations and the discussion of their precision as applied especially to Engineering, Physics, and Astronomy. LEAVENWORTH.

143-144. ADVANCED CALCULUS. BAUER.

MUSIC

Professor CARLYLE SCOTT; Instructor DONALD FERGUSON; Special Instructors.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Harmony.....	6	Jr., sr.	None
3-4.	Counterpoint.....	4	Jr., sr.	See statement
5-6.	Form and Composition.....	2	Jr., sr.	1-2 and 3
7-8.	Analysis.....	2	Jr., sr.	1-2
9-10.	History of Music.....	6	Jr., sr.	None
11-12.	Canon and Fugue.....	2	Jr., sr.	1-2, 3-4
13-14.	Pianoforte.....	4 or 8	Jr., sr.	See statement
15-16.	Violin.....	4 or 8	Jr., sr.	See statement
17-18.	Violoncello.....	4 or 8	Jr., sr.	See statement
19-20.	Organ.....	4 or 8	Jr., sr.	See statement
21-22.	Other Orchestral Instruments....	4 or 8	Jr., sr.	See statement
23-24.	Chorus.....	2	Jr., sr.	None
25-26.	Orchestra.....	2	Jr., sr.	None
27-28.	Public School Music.....	4	Jr., sr.	None

- 1-2. HARMONY. The study of chords, their construction, relations, and progressions. Written exercises on basses, the harmonization of given melodies. SCOTT.
- 3-4. COUNTERPOINT. The harmonization of melodies in two, three, and four voices in the different orders of counterpoint. Prerequisite, a thorough knowledge of harmony. FERGUSON.
- 5-6. MUSICAL FORM AND FREE COMPOSITION. For those specializing in Music and can be taken only with the consent of the instructor. At the close of the year a program of original composition will be given. FERGUSON.
- 7-8. ANALYSIS. Course devoted to the analysis of musical works as regards their formal construction, viz., subdivision of themes into phrases, sections, and motives; the ways in which they are combined and transformed, also period formation and modulation. Symphonies to be presented by the local orchestra are among the compositions used in this course.
- 9-10. HISTORY OF MUSIC. A literary course. Lectures given on the development of music from the time of Palestrina to the present day. FERGUSON.
- 11-12. CANNON AND FUGUE. SCOTT.
- 13-14. PIANOFORTE. Open to juniors who have mastered technical difficulties of the degree of Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas; for those who intend to pursue the higher branches of the pianoforte, the art of playing, or to fit themselves for piano teachers. SCOTT, FERGUSON.
- 15-16. VIOLIN. Candidate must be able to play the first ten of Kreutzer's forty etudes, and the easier Handel and Mozart sonatas.
- 17-18. VIOLONCELLO. Candidates must pass entrance examinations equal to the above grade.
- 19-20. ORGAN.
- 21-22. OTHER ORCHESTRAL INSTRUMENTS.
- 23-24. CHORUS. A popular course in choral practice for four-part mixed voices. SCOTT.
- 25-26. ORCHESTRA.
- 27-28. PUBLIC SCHOOL MUSIC. This course includes methods, harmony, analysis, voice training, composition, and practice teaching. Students are expected to become members of the chapel choir and to take part in its duties. KENDALL.

PHILOSOPHY AND PSYCHOLOGY

Professor NORMAN WILDE*; Associate Professor DAVID F. SWENSON;
 Assistant Professors JAMES BURT MINER, HERBERT H. WOODROW; In-
 structors EDMUND T. DANA, AUSTIN S. EDWARDS, RUPERT C. LODGE.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits.

COURSES				
No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Psychology	6†	Soph., jr., sr.	None
5a.	Elements of Psychology	3	Soph., jr., sr.	None
5b.	Elements of Psychology	3	Soph., jr., sr.	None
9a.	Logic	3	Soph., jr., sr.	None
9b.	Logic	3	Soph., jr., sr.	None
13.	Introd. to Philosophy	3	Jr., sr.	3 credits
14.	Educational Psychology	3	Jr., sr.	1-2 or 5
15.	Philosophy of Religion	3	Jr., sr.	3 credits
51a.	Ethics	3	Jr., sr.	6 credits
51b.	Ethics	3	Jr., sr.	6 credits
55.	Psychological Interpretation	3	Jr., sr.	6 credits
56.	Aesthetics	3	Jr., sr.	6 credits
101.	Experimental Psychology	3	Jr., sr., grad.	1-2
102.	Experimental Psychology	3	Jr., sr., grad.	101
105.	Mental Retardation	2	Jr., sr., grad.	1-2
109.	Psychological Principles	3	Sr., grad.	12 credits inc. 9, and 1-2 or 5
112.	Advanced Educ. Psychology	3	Sr., grad.	1-2
115-116.	Seminar in Psychology	6†	Sr., grad.	12 credits
121.	Ancient Philosophy	3	Jr., sr., grad.	6 credits
122.	Modern Philosophy	3	Jr., sr., grad.	6 credits
123.	Philosophy of the 19th Century	3	Sr., grad.	12 credits
129-130.	Seminar in Philosophy	6	Sr., grad.	12 credits

†Both semesters must be completed before credit is given for the first.

1-2. GENERAL PSYCHOLOGY. MINER, WOODROW, EDWARDS.

5a. ELEMENTS OF PSYCHOLOGY. SWENSON, DANA.

5b. ELEMENTS OF PSYCHOLOGY. SWENSON, DANA.

9a. LOGIC. SWENSON, DANA, LODGE.

9b. LOGIC. SWENSON, DANA, LODGE.

13. INTRODUCTION TO PHILOSOPHY. DANA.

14. EDUCATIONAL PSYCHOLOGY. EDWARDS.

15. PHILOSOPHY OF RELIGION. SWENSON.

51a. ETHICS. LODGE.

51b. ETHICS. LODGE.

55. PSYCHOLOGICAL INTERPRETATION. MINER.

56. AESTHETICS. SWENSON.

101. EXPERIMENTAL PSYCHOLOGY. WOODROW.

102. EXPERIMENTAL PSYCHOLOGY. WOODROW.

*Absent on leave 1914-15.

105. MENTAL RETARDATION. The nature and conditions of retarded and **pervverted** development in children; the detection of mental defects and the devising of special methods for the training of backward children. Specially designed for those contemplating teaching or social work. The observation of backward children forms a part of the work. WOODROW.
109. PSYCHOLOGICAL PRINCIPLES. SWENSON.
112. ADVANCED EDUCATIONAL PSYCHOLOGY. The experimental and statistical methods used in the study of problems in development and education, together with the results of researches in these lines; training for independent psychological investigation of such problems. MINER.
- 115-116. SEMINAR IN PSYCHOLOGY. Minor or major research in experimental, educational, analytic, genetic, or comparative psychology. MINER, WOODROW.
121. ANCIENT AND MEDIEVAL PHILOSOPHY. LODGE.
122. MODERN PHILOSOPHY. LODGE.
123. THE PHILOSOPHY OF THE NINETEENTH CENTURY. DANA.
126. LOGIC OF SCIENCE. SWENSON.
- 129-130. SEMINAR IN PHILOSOPHY. LODGE.

PHYSICS

Professors JOHN ZELENY*, ANTHONY ZELENY; Associate Professor HENRY A. ERIKSON; Assistant Professor ALOIS F. KOVARIK; Instructors EARLE H. KENNARD, PAUL E. KLOPSTEG, LOUIS W. MCKEEHAN, JAMES C. SANDERSON.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, with six credits in Chemistry.

For a Major, eighteen credits, including Course 92, not including Courses 1, 2, 3, and 4, together with the reinforcing subjects selected from Mathematics, Mechanics, Astronomy, Advanced Modern Languages, and additional Physics.

For a B.A. with Distinction, the general requirements (page 9), twenty-four credits in Physics, and Mathematics through integral calculus.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	General Physics	3	Soph., jr., sr.	Plane Trig.
2.	General Physics	3	Soph., jr., sr.	1
3.	General Laboratory Practice	1	Soph., jr., sr.	See statement
4.	General Laboratory Practice	1	Soph., jr., sr.	See statement

No.	Title	Credits	Offered to	Prereq. Courses
11.	Mechanics of Solids and Fluids...	4	Jr., sr.	Math. 2 or 4
12.	Heat, Magnetism, and Electrostatics.....	4	Jr., sr.	11
13.	Electrokinetics.....	4	Jr., sr.	12
14.	Sound and Light.....	4	Jr., sr.	11
81.	Physical Manipulation and Laboratory Technique.....	3	Jr., sr.	4 or 12
92.	Teachers' Course.....	1	Sr.	1-4 or 11-14 inc.
101-102.	Dynamics.....	6	Jr., sr., grad.	2 or 12 and Math. 51
171a.	Adv. Physical Measurements.....	3	Jr., sr., grad.	4 or 12
173b.	Adv. Physical Measurements.....	6	Jr., sr., grad.	4 or 12

1. GENERAL PHYSICS. Mechanics of solids and fluids, sound and heat. Treatment experimental rather than mathematical; the fundamental principles. The first part of a general course, continued in Courses 2, 3, and 4; should be taken in conjunction with Course 3, but may be taken separately. A. ZELENY, SANDERSON, KLOPSTEG.
2. GENERAL PHYSICS. Light, electricity, and magnetism. Treatment experimental; the fundamental principles, including those of radioactivity, ionization, X-radiation, and the electrical constitution of matter. The second part of a general course in Physics; should be taken in conjunction with Course 4, but may be taken separately. A. ZELENY, SANDERSON, KLOPSTEG.
3. GENERAL LABORATORY PRACTICE. Physical measurements in the mechanics of solids and fluids, and in heat and sound, giving the student a knowledge of experimental methods and an intimate acquaintance with the fundamental facts of the subject. Open to all who have completed or are taking Course 1. ERIKSON, SANDERSON.
4. GENERAL LABORATORY PRACTICE. Physical measurements in light, electricity, and magnetism. Open to all who have completed or are taking Course 2, and have completed Course 3. ERIKSON, SANDERSON.
11. MECHANICS OF SOLIDS AND FLUIDS. A thorough drill in the elementary principles of mechanics; numerous simple problems to illustrate the principles; laboratory work in the last half of the semester only. The first part of a general course, continued in Courses 12, 13, and 14. KOVARIK, MCKEEHAN.
12. HEAT, MAGNETISM, AND ELECTROSTATICS. The fundamental principles, mainly from the experimental side; the measurement of the most important quantities involved; lectures to illustrate the various phenomena studied. The second part of a general course in Physics. KOVARIK, MCKEEHAN.
13. ELECTROKINETICS. The phenomena accompanying the passage of electricity through solids, liquids, and gases; the various laws which

- govern such discharges; the basic principles of Electrical Engineering; a brief study of ionization, the X-rays, radioactivity, electric waves, and wireless telegraphy, measurements of the various electrical quantities. The third part of a general course in Physics. J. ZELENY, ERIKSON, KLOPSTEG.
14. SOUND AND LIGHT. Wave motion and the various phenomena of sound and light; lectures, illustrated with experiments showing the various effects studied; laboratory work to aid the student to a better insight into some of the relations. The fourth part of a general course in Physics. J. ZELENY, ERIKSON, KLOPSTEG.
81. PHYSICAL MANIPULATION AND LABORATORY TECHNIQUE. Especially useful to those who intend to teach the science or to specialize in it. The essential physical manipulations (such as the cleaning and distilling of mercury, soldering, glass blowing, glass cutting), the use of some instruments of precision (such as the cathetometer, the dividing engine, the balance, mercury air pumps and gauges, etc.). A. ZELENY.
92. TEACHERS' COURSE. Methods of presentation; selection of lecture and laboratory experiments; laboratory management. A. ZELENY.
- 101-102. DYNAMICS. Some problems in dynamics which are essential for advanced physics and chemistry. ERIKSON.
- 171a. ADVANCED PHYSICAL MEASUREMENTS. Individual work in the laboratory on topics especially chosen to serve best the needs and capacity of each student; intended to introduce him to some of the more intricate physical measurements. J. ZELENY.
- 173b. ADVANCED PHYSICAL MEASUREMENTS. The same as Course 171a except that twice as much time is devoted to the subject. J. ZELENY.

Students may select additional work, on the approval of the Committee, from other courses announced in the Bulletin of the College of Science, Literature, and the Arts.

POLITICAL SCIENCE

Professor WILLIAM A. SCHAPER; Associate Professors CEPHAS D. ALLIN, JEREMIAH S. YOUNG.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits in Political Science.

For a Major, eighteen to twenty-four credits in Political Science. Unless registered in a combined Academic-Professional course, students taking a major in Political Science must take a minor in Economics, and vice versa; and must take additional supporting subjects (eighteen credits) selected from other courses in Economics, Political Science, History,

Sociology, Psychology or Philosophy; or from other subjects according to individual arrangements with advisers.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a.	American Government.....	3	Soph., jr., sr.	None
1b.	American Government.....	3	Soph., jr., sr.	None
<i>General Courses</i>				
3.	Comparative Government.....	3	Soph., jr., sr.	1
5.	Municipal Organization.....	3	Soph., jr., sr.	1
6.	Municipal Administration.....	3	Soph., jr., sr.	1
8.	State and Local Government....	3	Soph., jr., sr.	1
9.	Colonial Administration.....	3	Soph., jr., sr.	1
11.	Jurisprudence.....	3	Soph., jr., sr.	1
13.	Business Law.....	3	Jr., sr.	1 or Econ. 1
14.	Business Law.....	3	Jr., sr.	13
16.	Comparative Latin-American Government.....	3	Soph., jr., sr.	1
<i>Special Courses</i>				
25.	American Govt. (Engineers).....	2	Sr.	None
26.	Commercial Law (Engineers).....	2	Sr.	25
<i>Advanced Courses</i>				
101.	Constitutional Law.....	3	Jr., sr., grad.	6 credits
102.	Modern Political Thought.....	3	Jr., sr., grad.	6 credits
104.	Political Parties.....	3	Jr., sr., grad.	6 credits or 1 and History 5-6
105.	Comparative Administration....	3	Jr., sr., grad.	6 credits
106.	Legislative Power and Methods...	3	Jr., sr., grad.	6 credits
108.	Police Power.....	3	Jr., sr., grad.	6 credits
109.	Diplomacy.....	3	Jr., sr., grad.	6 credits or 1 and History 156
110.	International Law.....	3	Jr., sr., grad.	1 & 3, or 109
111.	Government of the British Empire.	3	Jr., sr., grad.	6 credits or 1 and His- tory 7
112.	Comparative Federal Government.	3	Jr., sr., grad.	6 credits
201-202.	Seminar.....	6	Sr., grad.	12 credits

1a. AMERICAN GOVERNMENT. Organization and actual workings of the national government; nature and origin of the American governmental system; important statutes on naturalization, organization of the judiciary and of executive departments, interstate commerce, trusts, etc. If possible, History 5-6 should accompany or follow this course. SCHAPER, YOUNG, ALLIN.

1b. AMERICAN GOVERNMENT. Same as Course 1a.

3. COMPARATIVE GOVERNMENT. The organization and workings of the governments of the great European powers of to-day. ALLIN.

5. MUNICIPAL ORGANIZATION. A study of the organization of modern city

governments in the United States, England, France, and Germany. The growth of cities, their relation to the state, the various forms of charters, and methods of securing them, selection of city officials, municipal politics, recent exposures of municipal inefficiency and corruption, with proposed remedies, including a detailed study of certain typical American cities. SCHAPER.

6. MUNICIPAL ADMINISTRATION. A study of the functions of modern city governments in the United States, England, France, and Germany. Municipal finance, police, sanitation, public works, public utilities, education, and recreation. The legal standing of the city. SCHAPER.
8. STATE AND LOCAL GOVERNMENT. A comparison of our state constitutions; relations of the states to the United States and to the local units of government; recent experiments such as the initiative and referendum, the recall, primary systems of nominating. YOUNG.
9. COLONIAL ADMINISTRATION. The principal classes of colonies; the causes of colonization; the social, economic, and political tendencies of colonial development; imperial relations, preferential trade and independence; the political systems of modern colonial governments. Not offered in 1914-15. ALLIN.
11. THE ELEMENTS OF JURISPRUDENCE. Those human relations requiring legal regulation considered from the American point of view; the nature and source of law, status, rights and wrongs, partnership, corporations, etc.; practice in looking up cases and summarizing leading principles. For active citizenship and for the study of law. Text, with lectures and assigned readings. Not offered in 1914-15. SCHAPER.
13. ELEMENTS OF BUSINESS LAW, PART I. The principles of law governing ordinary business transactions. So much of the law taught as every educated man ought to know for his guidance in every-day business affairs. The general law of contracts, bankruptcy, agency, and sales. Assigned readings, lectures, cases, and quizzes. YOUNG.
14. BUSINESS LAW, PART II. The law of negotiable instruments, of partnerships, and of corporations. Lectures, cases, assigned readings, and quizzes. YOUNG.
16. COMPARATIVE LATIN AMERICAN GOVERNMENTS. The governments and political conditions of Brazil, Argentine, Chile, and Mexico. Text, lectures, and assigned readings. Not offered in 1914-15. SCHAPER.
25. AMERICAN GOVERNMENT (Engineers). ALLIN.
26. COMMERCIAL LAW (Engineers). YOUNG.
101. AMERICAN CONSTITUTIONAL LAW. Constitutional law, its origin and nature; American constitutions, how made and amended; the courts

and the development of the Constitution; Federal and State relations; the territories, their acquisition and government; citizenship. SCHAPER.

102. MODERN POLITICAL THOUGHT. The nature and purpose of the modern state; sovereignty; the growth of democracy; the decline of individualism; the increase of governmental activities; the great contributions to political thought from Hobbes, Locke, and Rousseau to the present time. SCHAPER.
104. POLITICAL PARTIES. An advanced course in political parties, their origin, development, and function. Methods of making nominations, securing minority representation, the recall, the initiative and referendum, etc. Text, lectures, and special topics. SCHAPER.
105. COMPARATIVE ADMINISTRATION. Administration as a science; its origin and development; an analysis of the administrative systems of the United States, England, France, and Germany, with special reference to the law of officers, the merit systems, and special administrative tribunals. YOUNG.
106. LEGISLATIVE POWER AND METHODS. Source and scope of the legislative power; methods used by legislative bodies; current public questions; formulation and defense of legislative bills. Text, lectures, cases, and special topics. YOUNG.
108. THE POLICE POWER. The nature and scope of the police power; the public welfare, including safety, order, morals, and protection against business fraud and oppression; the fundamental rights under the police power. YOUNG.
109. DIPLOMACY. The growth of international relations; the mode of conducting foreign affairs; diplomatic and consular service; the framing, interpretation, and termination of treaties and compacts. ALLIN.
110. INTERNATIONAL LAW. Nature, sources, and sanction of international law; the status of nations, the rules of peace, neutrality, and war, and the arbitration movement. ALLIN.
111. THE GOVERNMENT AND POLITICS OF ENGLAND AND THE BRITISH EMPIRE. Not offered in 1914-15. ALLIN.
112. COMPARATIVE FEDERAL GOVERNMENT. Ancient and modern federal unions, especially the constitutions of the United States, Switzerland, Canada, and Australia, the South African Union and the proposals for Imperial federation. ALLIN.
- 201-202. SEMINAR IN POLITICAL SCIENCE. Research in the field of Political Science; the discussion of current problems in politics and administration. SCHAPER, YOUNG, ALLIN.

RHETORIC AND PUBLIC SPEAKING

Professors JOSEPH M. THOMAS*, MARGARET SWEENEY; Assistant Professors DANIEL FORD, CHARLES W. NICHOLS*, SIDNEY F. PATTISON, ANNA H. PHELAN, FRANK M. RARIG; Instructors JAY L. CHESNUTT, B. VINCENT CRAWFORD, HALDOR GISLASON, CHARLES E. SKINNER, ARTHUR J. TIEJE, HELEN A. WHITNEY.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits in addition to Course 1-2.

For a Major, eighteen to twenty-four credits, including Courses 11-12 and 15-16, in addition to Course 1-2, together with twelve credits in English. Students may select additional work, on the approval of the Committee, from other courses announced in Rhetoric.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
11-12.	Exposition Description, Narration	6	Soph., jr., sr.	1-2
15-16.	Exposition and Argument.....	6	Soph., jr., sr.	1-2
41-42.	Public Speaking.....	6	Soph., jr., sr.	1-2
45-46.	Argumentation and Debate.....	6	Soph., jr., sr.	See statement
81-82.	Interpretative Reading.....	6	Jr., sr.	1-2, 41-42
83-84.	Advanced Public Speaking.....	6	Jr., sr.	1-2, 41-42
102.	Versification.....	3	Jr., sr., grad.	1-2, 11-12 or 15-16
103-104.	Studies in Structure and Style...	6	Jr., sr., grad.	1-2, 11-12 or 15-16
107.	Imitative Writing.....	3	Jr., sr., grad.	1-2, 11-12 or 15-16
110.	Short-Story Writing.....	3	Jr., sr., grad.	1-2, 11-12 or 15-16
111-112.	Essay Writing.....	6	Jr., sr., grad.	1-2, 11-12 or 15-16
119-120.	Seminar in Writing.....	4	Sr., grad.	See statement
201-202.	Seminar in Rhetoric.....	6	Sr., grad.	See statement

RHETORIC

11-12. EXPOSITION, DESCRIPTION, AND NARRATION. In the first semester the analysis of specimens of exposition; short themes and fortnightly essays, with emphasis on careful planning and amplification. In the second semester, the same general plan applied to description and narration. Not open to those who have credit for Course 15-16. PATTISON, PHELAN, SKINNER, WHITNEY.

15-16. EXPOSITION AND ARGUMENT. The first semester, exposition; the second, argument. The study of a text and the analysis of specimens, accompanied by weekly essays and shorter themes. Not open to those who have credit for Course 11-12. CRAWFORD, TIEJE.

*Absent on leave, 1914-1915.

102. **VERSIFICATION.** The nature of poetry and a detailed analysis of English meters and of the various English verse forms. The theory accompanied by criticism of current poetry and practice in writing verse. SKINNER.
- 103-104. **STUDIES IN STRUCTURE AND STYLE.** Theory of structure and style; rhetorical analysis of standard English prose; themes based on personal observation, current reading, and investigation; preparation of essays with particular classes of readers in view. FORD.
107. **IMITATIVE WRITING.** The principles of structure, diction, and style, which underlie the work of leading English writers; application of these principles in both imitative and original compositions. WHITNEY.
110. **SHORT-STORY WRITING.** The technique of the short story, accompanied by constructive work in story writing. WHITNEY.
- 111-112. **ESSAY WRITING.** Practice in the writing of such forms of the essay as the didactic, the biographical, the critical, the informal; opportunity for extended composition. Two essays a semester. Individual aid given to the student in the gathering of material, the planning of each paper, and the criticism of each essay. Analysis of a considerable body of modern essays. PATTISON.
- 119-120. **SEMINAR IN WRITING.** For a limited number of advanced students who write with facility, and who desire personal criticism and direction. Criticism of manuscripts submitted for inspection, with lectures upon the fundamental principles of English composition. Open with special permission to seniors and graduate students who have completed Courses 1-2, 11-12 or 15-16, and at least one other course. PHELAN.
- 201-202. **SEMINAR IN RHETORIC.** For those who are specializing in Rhetoric and Composition. Lectures, reports, and theses on special problems of rhetorical theory. Open to seniors and graduate students who have completed Courses 1-2, 11-12 or 15-16, and at least one other course. Not given in 1914-15. THOMAS.

PUBLIC SPEAKING

- 41-42. **A GENERAL COURSE IN PUBLIC SPEAKING.** The fundamentals of effective speaking; breathing, voice-production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; the principles underlying the making of the speech applied in both oral and written compositions. RARIG, GISLASON, CHESNUTT.
- 45-46. **ARGUMENTATION AND DEBATE.** The science of argumentation and the art of debate; the processes of reasoning and their application

to written and spoken argument; argumentative writings analyzed and briefed; illustrative debates, including the Lincoln-Douglas debates, carefully studied; practical exercises in debate and forensics. Open to those who have completed Rhetoric 1-2 and 41-42, or Rhetoric 1-2 and have had training in debating in preparatory school. GISLASON.

81-82. INTERPRETATIVE READING. The interpretation and expression of the various forms of literature, such as the essay, the short story, lyric and narrative poetry, and the drama. The aim is intelligent and sympathetic reading. RARIG.

83-84. ADVANCED PUBLIC SPEAKING. The distinctive characteristics of oratorical style; analysis of the masterpieces of representative orators and application of the principles of style thus discovered in written and extemporaneous speeches. Individual criticism and direction. Those desiring to prepare for the Pillsbury contest should register for this course. RARIG.

ROMANCE LANGUAGES

Professors EVERETT WARD OLMSTED, COLBERT SEARLES; Assistant Professor JULES T. FRELIN; Instructors ROBERT U. LAGOW, RUTH SHEPARD PHELPS*, E. K. SIRICH; Assistant HOMER A. DESMARAIS.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits (sixteen credits if Course 1-2 is included).

For a Major, not less than eighteen to twenty-four credits, not including Course 1-2, together with reinforcing subjects selected from French, Italian, Spanish, Philology, Latin, English, Greek, German, advanced Scandinavian, Philosophy, History.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Beginning French.....	10†	Fr., soph.	None
3-4.	Intermediate French.....	6†	Soph., jr.	1-2
5-6.	Survey of French Literature.....	6†	Jr., sr.	3-4
7-8.	Elem. French Conv. and Comp....	4†	Soph., jr.	1-2
31-32.	Beginning Spanish.....	6†	Soph., jr.	None
41-42.	Beginning Italian.....	6†	Soph., jr., sr.	None
51-52.	Adv. French Conv. and Comp....	4†	Jr., sr.	3-4 and 7-8
61-62.	Intermediate Spanish.....	6†	Jr., sr.	31-32
101-102.	17th-Cent. French Lit.....	6†	Jr., sr., grad.	5-6
103-104.	18th-Cent. French Lit.....	6†	Jr., sr., grad.	5-6
105-106.	19th-Cent. French Lit.....	6†	Jr., sr., grad.	5-6
107-108.	16th-Cent. French Lit.....	6†	Sr., grad.	5-6
109-110.	Seminar in French Drama.....	2†	Sr., grad.	101-102 or 103-104 or 105-109
145-146.	Spanish Drama.....	4†	Sr., grad.	61-62
147-148.	Spanish Novel.....	4†	Sr., grad.	61-62
173-174.	Dante, Petrarch, and Boccaccio...	6†	Jr., sr., grad.	41-42
175-176.	Modern Italian Poetry.....	6†	Jr., sr., grad.	41-42

†Both semesters must be completed before credit is allowed for the first semester.

*Absent on leave 1914-15.

INTRODUCTORY COURSES

French

- 3-4. INTERMEDIATE FRENCH. Grammar, composition, and reading; increased use of French in the classroom. Selections from modern prose and poetry. FRELIN, DESMARATS.
- 5-6. GENERAL SURVEY OF FRENCH LITERATURE. Lectures, recitations, and assigned readings. Designed to cover the whole period in historical outline, and to prepare for a more minute study of special periods. Selections from representative authors. OLMSTED.
- 7-8. ELEMENTARY FRENCH CONVERSATION AND COMPOSITION. Conversation based on modern French life. FRELIN.
- 51-52. ADVANCED FRENCH CONVERSATION AND COMPOSITION. Conversations on French history, literature, the drama. FRELIN.

Spanish

- 31-32. BEGINNING SPANISH. Pronunciation, grammar, conversation, and composition; selected reading in easy prose. OLMSTED.
- 61-62. INTERMEDIATE SPANISH. Advanced grammar and composition; reading of modern novels and dramas.

Italian

- 41-42. BEGINNING ITALIAN. Pronunciation, grammar, composition; selected readings.

ADVANCED COURSES

French

- 101-102. SEVENTEENTH-CENTURY LITERATURE. Prose, poetry, and drama; the works of Corneille, Racine, Molière, La Fontaine, Pascal, La Bruyère, *et al.* Reports on collateral readings; lectures; compositions. OLMSTED.
- 103-104. EIGHTEENTH-CENTURY LITERATURE. Lectures, reading, reports.
- 105-106. NINETEENTH-CENTURY LITERATURE. The Romantic and other movements down to recent time. Lectures, reading, reports.
- 107-108. SIXTEENTH-CENTURY LITERATURE. Lectures, reading, reports.
- 109-110. SEMINAR IN FRENCH DRAMA.

Spanish and Italian

- 145-146. SPANISH DRAMA. Guillen de Castro, Tirzo de Molina, Calderon, etc. OLMSTED.

- 147-148. SPANISH NOVEL. Not to be given in 1914-15. OLMSTED.
- 173-174. DANTE, PETRARCH, AND BOCCACCIO. An introduction to the works of these authors; reading in class, lectures, reports, and collateral reading. Not offered in 1914-15. PHELPS.
- 175-176. MODERN ITALIAN POETRY. Ariosto and Tasso; poetry of the nineteenth century. Lectures, reports, and collateral reading. Not offered in 1914-15. PHELPS.

SCANDINAVIAN

Professors GISLE BOTHNE. ANDREW A. STOMBERG.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits, not including Courses 1-2, 5-6.

For a Major, eighteen to twenty-four credits, not including Courses 1-2 and 5-6, are required. Students may select additional work, on the approval of the Committee, from other courses announced in Scandinavian.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Beginning Norwegian.....	10*	All	None
3-4.	Advanced Norwegian.....	6*	Soph., jr., sr.	1-2
5-6.	Beginning Swedish.....	10*	All	None
7-8.	Advanced Swedish.....	6*	Soph., jr., sr.	5-6
101-102.	Modern Norwegian Literature....	6*	Jr., sr.	1-2 and 3-4
103.	Early Norwegian Literature	2	Sr., grad.	101-102
104.	Ibsen.....	2	Sr., grad.	101-102
105-106.	History of Northern Europe.....	6	Jr., sr., grad.	See statement
107-108.	Swedish Literature.....	6*	Jr., sr., grad.	5-6 and 7-8
109.	Strindberg.....	2	Sr., grad.	107-108
112.	Modern Danish Literature.....	2	Jr., sr., grad.	1-2 and 3-4 or 5-6 and 7-8
113-114.	Old Norse (Icelandic).....	4	Sr., grad.	1-2 and 3-4 or 5-6 and 7-8

*Both semesters must be completed before credit is given for the first semester.

- 1-2. BEGINNING NORWEGIAN. Grammar, composition, select reading in easy prose and poetry. BOTHNE.
- 3-4. ADVANCED NORWEGIAN. Grammar, composition, conversation, elementary history of literature, and select works of modern authors. BOTHNE.
- 5-6. BEGINNING SWEDISH. Grammar, composition, select reading in easy prose and verse. STOMBERG.
- 7-8. ADVANCED SWEDISH. First semester: grammar, composition, and conversation; prose texts. Second semester: an elementary study of the

literature of Sweden and reading of Tegner's *Fritiofs Saga*. STOMBERG.

- 101-102. MODERN NORWEGIAN LITERATURE. Norwegian literature from 1814 to the present day. BOTHNE.
103. EARLY NORWEGIAN LITERATURE. Selected sagas, Norwegian and Danish folk-songs, Holberg, Wessel. Not offered in 1914-15. BOTHNE.
104. IBSEN. Lectures, reading, and interpretation. BOTHNE.
- 105-106. HISTORY OF NORTHERN EUROPE. History of the Scandinavian countries from the earliest period to recent times. Prerequisites: Courses 1-2 and 3-4 or 5-6 and 7-8 or Courses 1, 2, or 3 in History. A knowledge of the Scandinavian languages not required. STOMBERG.
- 107-108. SWEDISH LITERATURE. History of Swedish literature from 1719 to the present time. History of the literature and study of modern authors, including Selma Lagerlöf, Geijerstam, Strindberg. STOMBERG.
109. STRINDBERG. Lectures, reading, and interpretation. STOMBERG.
112. MODERN DANISH LITERATURE. From Oehlenschläger to the present time. BOTHNE.
- 113-114. OLD NORSE (Icelandic). Grammar and reading. *Gunnlaugs Saga Ormstungu*. Not offered in 1914-15. BOTHNE.

SOCIOLOGY AND ANTHROPOLOGY

Professors SAMUEL G. SMITH, ALBERT ERNEST JENKS; Instructor ALBERT N. GILBERTSON.

GENERAL LECTURES IN SOCIOLOGY

President Vincent will lecture to the students in the Department of Sociology and Anthropology from time to time during the year on Social Theories and Methods of Investigation.

REQUIREMENTS OF THE DEPARTMENT

For a Minor, twelve to eighteen credits.

For a Major, eighteen to twenty-four credits, together with reinforcing subjects selected from Animal Biology, Economics, Geology, History, Politics, Psychology, and additional Sociology and Anthropology.

COURSES

No.	Title	Credits	Offered to	Prereq. course s
<i>Introductory Courses</i>				
1a.	Descriptive Sociology.....	3	Soph., jr.	None
1b.	Descriptive Sociology.....	3	Soph., jr.	None
3a.	Elements of Sociology.....	3	Soph., jr.	None
3b.	Elements of Sociology.....	3	Soph., jr.	None
5.	Culture Anthropology.....	3	Jr., sr	None
<i>General Courses</i>				
9.	Social Pathology.....	3	Jr., sr.	1 or 3 or 5
10.	Social Groups.....	3	Jr., sr.	1 or 3
12.	Ethnology.....	3	Jr., sr.	1
15.	Institutions.....	3	Jr., sr.	1 or 3
17.	Social Psychology.....	3	Jr., sr.	3 or General Psychology
<i>Advanced Courses</i>				
102.	Social Theory.....	3	Jr., sr., grad.	3 or 17, and one other course
105.	Biblical Sociology.....	3	Jr., sr., grad.	6 credits
108.	Philippine People.....	3	Jr., sr., grad.	1 or 3, and one other course
110.	Physical Anthropology.....	3	Jr., sr., grad.	See statement
112.	American Negro.....	3	Jr., sr., grad.	1 and one other course
113.	American People.....	3	Jr., sr., grad.	1 or 3, and one other course
114.	American People (Cont'd).....	3	Jr., sr., grad.	113
117.	Modern Social Institutions.....	3	Jr., sr., grad.	1 or 3, and one other course
120.	Social Evolution.....	3	Jr., sr., grad.	1 or 3, and one other course
121.	Seminar in Social Problems.....	3	Sr., grad.	Four correlated courses for seniors
123.	Seminar in Anthropology.....	3	Sr., grad.	Four correlated courses for seniors

INTRODUCTORY COURSES

- 1a. DESCRIPTIVE SOCIOLOGY. Concrete data concerning human association, showing groups of peoples living in the four grades of culture called savagery, barbarism, civilization, and enlightenment; the activities and institutions natural and peculiar to the several groups studied. Text-book, lectures, and assigned readings. JENKS, GILBERTSON.
- 1b. DESCRIPTIVE SOCIOLOGY. Same as Course 1a.
- 3a. ELEMENTS OF SOCIOLOGY. To give a general knowledge of the field of modern sociology, for such special sociological investigations as students may wish to make. Textbook, lectures, assigned readings.
- 3b. ELEMENTS OF SOCIOLOGY. Same as Course 3a.
5. CULTURE ANTHROPOLOGY. An elementary course. The essential characteristics of mankind and the general features of the several races

of men; the origin and development of the series of activities and various institutions which have had their beginnings in primitive society. Textbooks, lectures, assigned readings, and thesis. JENKS.

GENERAL COURSES

9. SOCIAL PATHOLOGY. Charities and corrections, dealing especially with problems of poverty, crime, insanity, and social degeneration; a discussion of the child problem and methods of social amelioration. SMITH.
10. SOCIAL GROUPS. The clan and the village in primitive life; demography and the effect of environment upon social organization; a comparison with the nature of and reasons for the modern city.
12. ETHNOLOGY. The different races of men natural to America, Europe, Asia, Africa, and Oceania; the various historical classifications of men into races; the causes of the origin and distribution of several races and sub-races; the future development of races; ethnological problems. Textbooks, lectures, assigned readings, and thesis. JENKS. GILBERTSON.
15. THE STUDY OF INSTITUTIONS. The genesis of custom and the beginnings of law with the geographical and race influence in the growth of states; the various forms of the family and their relation to forms of civilization. Not offered in 1914-15. SMITH.
17. SOCIAL PSYCHOLOGY. The social mind, public opinion, impulsive and rational social action, fashion, convention and custom, the mob and the crowd; an examination of the theories of Giddings, Tarde, Baldwin, Ross, and McDougall.

ADVANCED COURSES

102. SOCIAL THEORY. The foundations of sociology; the leading American, English, French, and German writers and their methods of approach to the science and the leading results they have secured.
105. BIBLICAL SOCIOLOGY. The development of Hebrew institutions, especially the church, the family, and the state; a comparison of similar institutions among people of like condition of culture; the effect upon Israel of the geography of Palestine, an account of its contact with others peoples, and the development of its religious ideas. SMITH.
108. THE PHILIPPINE PEOPLE. The geography, natural resources, and ethnology of the Philippine Islands; comparative study of the four large ethnic and culture groups of people; tropical influences; the present policy of the Insular Civil Government so far as it tends to modify the natural characteristics and modern culture of the inhabitants, and to effect American home interests in the Orient. Lectures,

illustrated lectures, assigned readings, and thesis. JENKS, GILBERTSON.

110. **PHYSICAL ANTHROPOLOGY.** The physical variations in the human body, with special attention to those variations which distinguish one race or group of men from another; the cause and significance of such variations; the physical evolution of the human body and forecast of its future. Six lectures on the development and anatomy of the human brain given by Associate Professor Charles A. Erdmann, of the Medical Faculty. Of prime importance to advanced students preparing for the medical course. Textbook, lectures, laboratory work, assigned readings, and thesis. Prerequisites, Course 5, or Course 1-2 in Animal Biology, and one other course in the department. JENKS, GILBERTSON.
112. **THE AMERICAN NEGRO.** The negro's African tribal kinsmen, and the rise and development of the American negro race from the birth of American slavery; the present characteristics, traits, and conditions of the negro; the developing tendencies and the probable future of the American negro race. Textbook, lectures, assigned readings, and thesis. JENKS, GILBERTSON.
113. **THE AMERICAN PEOPLE.** The distribution in the United States of the different peoples of the world found here; the natural genius of the peculiar home development of these peoples, and the modifications of this development in America; the dominant physical, mental, moral, and cultural characteristics of each people, and their relative importance to the nation. Textbook, lectures, assigned readings, and thesis. JENKS.
114. **THE AMERICAN PEOPLE (Continued).** A continuation of Course 113. The facts and forces of amalgamation and assimilation in America; essential and unique historical Americanisms and their value and virility for the future; America's ethnic problems. Lectures, assigned readings, and thesis. JENKS, GILBERTSON.
117. **MODERN SOCIAL INSTITUTIONS.** The fundamental social institution, the family, and the development of modern industrial, political, educational, and ecclesiastical institutions in their relation to human progress.
120. **SOCIAL EVOLUTION.** Evolution in its relation to social progress; the factors which compose a standard of social progress; the direction of social progress; the comparative study of the different standards and rational sanctions by which social progress may be determined.
121. **SEMINAR IN SOCIAL PROBLEMS.** An advanced course of method and independent research. SMITH.
123. **SEMINAR IN ANTHROPOLOGY.** An advanced course of method and independent research. JENKS.



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